STATE LIBRARY OF PENNSYLVANIA
3 0144 00058273 4

Digitized by the Internet Archive
in 2019 with funding from
This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

https://archive.org/details/vol1884annualrep00penn_0

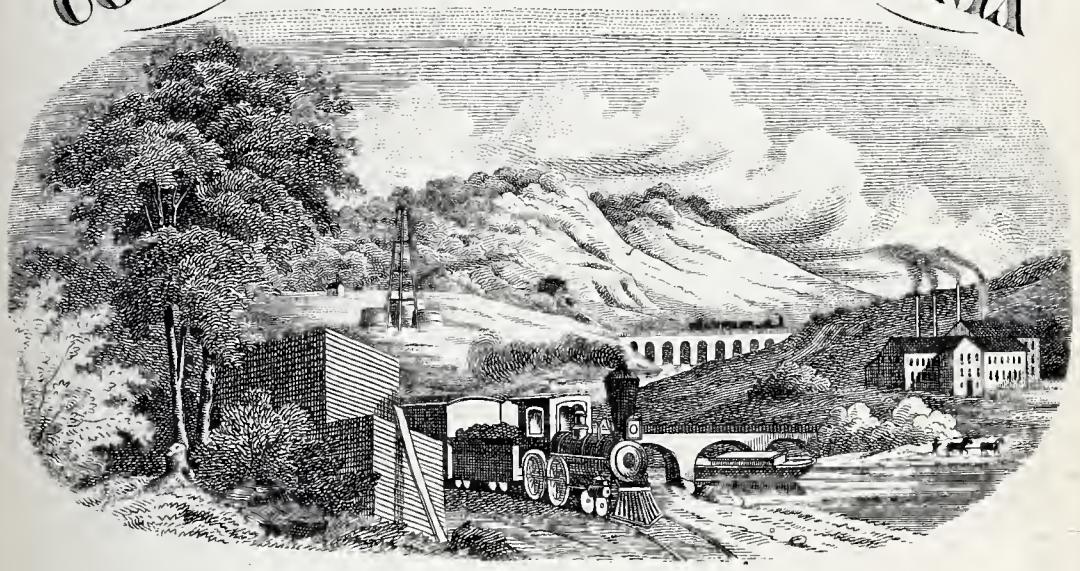
ANNUAL REPORT

OF THE

Secretary of Internal Affairs

OF THE

COMMONWEALTH OF PENNSYLVANIA



PART III.

INDUSTRIAL STATISTICS.

VOL. XII

1884.

HARRISBURG
LANE S. HART,
STATE PRINTER & BINDER.
1885.

P38.12
1.1
pt 3
cop 1

REPORT

OF THE

BUREAU OF INDUSTRIAL STATISTICS.

COMMUNICATION.

DEPARTMENT OF INTERNAL AFFAIRS,
HARRISBURG, *May 6, 1885.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

In compliance with the requirements of the Constitution, I have the honor to present you herewith, for transmission to the General Assembly, a report of this Department, Part III, Industrial Statistics, Vol. XII, 1884.

I am, very respectfully,
Your obedient servant,
J. SIMPSON AFRICA,
Secretary of Internal Affairs.

182913

LETTER OF TRANSMITTAL.

DEPARTMENT OF INTERNAL AFFAIRS,
BUREAU OF INDUSTRIAL STATISTICS, HARRISBURG, *May 1, 1885.*

Honorable J. SIMPSON AFRICA,
Secretary of Internal Affairs:

SIR: I have the honor to present herewith the twelfth annual report of the Bureau of Industrial Statistics, being the second of your official term as Secretary of Internal Affairs.

In the performance of the duties devolving upon this Bureau during the past year, the general system adopted and pursued in preceding years has been preserved. An effort, however, has been made to enlarge the scope of inquiry, and at the same time some slight changes, hereafter referred to, have been made in classification. Owing to the general depression of business during 1884, there has been great difficulty in obtaining accurate information, and in the effort to do so my own labor, as well as that of the clerical force under my direction, has been largely increased. Circulars containing inquiries with blank spaces for answers were, in accordance with usage, mailed to corporations, firms, and individuals throughout the State. These circulars were accompanied with a request, either printed or written, that a full and detailed reply should be made to each question.

There has been a general willingness to respond, but in many instances the replies have been so indefinite, and the excuses made, "Business has been so dull," "I did not keep an accurate account," that the correspondence required to elicit information assumed large proportions. The general depression of business was evidenced by many of the returns made, some of which were, to wit: "Nothing doing;" "Waiting for something to turn up;" "Never saw times so dull;" "There is no business to report;" "Work is so irregular that I am ashamed to make report." Many to whom circulars were forwarded had retired from business, while others reported that they had transferred their interest to new parties. In the last instance, duplicate circulars were issued, in nearly every case meeting with a ready and satisfactory response.

Labors of the Bureau.

While the report of the Bureau contains much valuable statistical information, it does not take, and is not intended, as many erroneously suppose, to take the place of a census. Its business is to impartially inquire

into the relations of capital and labor in their bearings upon the social, educational, and industrial welfare of all classes of working people, and to offer practical suggestions for the improvement of the same. In furtherance of this object, the Bureau is to collect, compile, and publish such statistics in regard to the wages of labor and the social condition of the laboring classes as will enable the people of the State to judge how far legislation can be invoked to correct existing evils. In the endeavor to accomplish this purpose, an effort has been made to increase the detailed information as to such operations where large invested capital employs large numbers of laborers. In many small establishments where employer and employé are in immediate and continued contact, the relations are either of a personal nature, or are regulated and controlled in a great degree by rules governing the larger operations. A full and minute report of such small establishments would, for the purposes intended, be more of an incumbrance than a benefit, and would tend to mislead rather than aid in the desired investigations. Large operations, in a very great degree, control the methods of small establishments. Where evils exist they are mostly found where laborers in large bodies are employed. It was deemed advisable, in the revision of the directory of 1884, to omit the names of persons, to whom circulars had been sent in previous years, whose business was less than $5,000 per annum. From those whose business requires a large amount of labor full answers have been requested. Where there has been a failure to comply, duplicate circulars were mailed, and detailed instructions given as to what was expected by the Bureau. As a consequence, the compilations made are from actual returns, and hence fewer approximations and estimates than have appeared in any previous report.

The statistical information contained in the reports of iron, coal, and textile fabrics embraces as wide a scope as in any previous year, and is much more accurate, for the reason that our correspondents have been fuller and more precise in their answers. The table of miscellaneous industries has been decreased by reason of a more complete classification than heretofore. Separate tables are now made of iron and its products, lumber and its products, etc. The utility of the report as a reference to special industries, it is believed, is thereby enhanced. The report relative to iron-ore mining is more specific than any heretofore made, but in respect to this industry there is considerable difficulty in obtaining accurate data, owing to the manner in which the business is conducted and the accounts kept. It is sometimes necessary to closely compare the reports in relation to each other, of owners, contractors, and sub-contractors, to obtain an intelligent idea of their business. The railroad labor report is full and complete. In it will be found the number of men employed and the amount of wages paid. At this time railroad employés have more steady work than the wage-laborers in any other reported industry in the State. Railroad employés must be competent for the special work assigned them, and a large amount of skilled labor is required. It is believed that the table

showing the wages paid railroad engineers, mechanics, and laborers will prove of value. The subject of wages is considered in a special report forwarded herewith, and it is referred to for more detailed information.

The Labor Problem.

That under a condition of affairs which should exist, the true interest of capital and labor would be identical, is unquestionable. From the reports made of difficulties, antagonisms, and strikes, it would appear that little real harmony exists between the employer and employed. Capital too often regards the laborer with little, if any, more consideration than a beast of burden, while the laborer, too often with justice, esteems the employer, if not an absolute oppressor, as utterly wanting in human feeling toward him. That such a state of affairs should exist is unfortunate, but a careful examination of the question renders such conclusion imperative. From statistics and reports received the following conclusions have been reached :

That the wage-worker, as a rule, is frugal, temperate, and industrious. The amount of wages paid do not admit of intemperate or improvident habits.

That the present amount of wages annually paid does not give to the wage-worker comfortable means of support, and enable him to lay by even a moderate fund to meet the necessary exigencies he is almost certain to encounter.

That wage-workers receive in wages at least one third less than is generally accredited to them, owing to the fact that the accredited wages per diem are not the average for computation throughout the year without due allowance is made for unemployed time. Enforced idleness is more disastrous than the nominally low rate of wages.

That at the present time steady and certain employment is more important to the wage-worker than a nominal advance in per diem wages, and it is to be hoped that business conditions will soon be such as will insure continuous employment.

That an average of eight hours a day is not now granted to the wage-worker. The uncertainty in the distribution of the working days is calculated to enervate the worker physically as well as mentally.

An evil growing out of present conditions is shown by the increase of child-labor, and this cannot be prevented until the head of the family is enabled by his own labor to earn an adequate support. The great mass of the community is composed of wage-workers. It is essential to the present and future welfare of the State that labor should be justly and adequately paid. It is the true interest of the employer as well as the employed, and it should be the aim of the employer not only to pay just wages to the extent of his ability, but also to protect the employés from casualties to life and limb, so frequently occurring by reason of the neglect of proper safeguards.

As above stated, I have been reluctantly forced to the conclusion that

antagonisms between capital and labor exist to an alarming extent. This is, to a great degree, due to the general depression of business by reason of which both capital and labor necessarily suffer. That so suffering, embittered differences should arise is natural, but unfortunate. It is absolutely necessary that concessions should be made by both parties to the controversy. That there should be honesty and fair dealing in their relations, that their actions should be controlled by principles of sound morality, is unquestionable. The moral, intellectual, and physical welfare of the wage-worker should be regarded by the employer, as well as the amount of labor that can be obtained from him. Capital properly invested and governed is a blessing to the community and the country, but when used as a means to degrade humanity and oppress labor, it is an unmixed evil.

Enforcement of Legislation.

The laws passed in the interest and for the protection of the wage-worker in this Commonwealth do not answer the purpose intended, for the reason that they are not generally observed. Labor suffers not so much from lack of laws for its protection as for the means of enforcing those already on the statute books. There are laws which regulate the employment of minors in mills, mines, and manufactories; laws intended to protect the lives and health of miners; laws to protect the coal miner from unjust weights and measures; laws regulating prison-contract labor; laws intended for protection from fire in factories, hotels, and dwellings; laws prohibiting company stores and store-orders in lieu of wages. These laws were all passed, wholly or in part, for the benefit of the wage-worker. In times of business prosperity, the necessity of these laws is not so much felt. Self-interest on the part of the employer induces him to protect his property, and there is little temptation for fraud or oppression. The wage-worker at such times is, to some extent, master of the situation. When work is plenty, he can have his choice of labor, and, rather than attempt to enforce the law, he seeks new employment. It is in times of business depression that the evils which these laws are intended to remedy are most felt. At such times the wage-worker dare not risk the loss of his situation. With wife and children demanding bread, he is powerless in demanding redress for grievances. He dare not run the risk of dismissal, without a chance of other employment, while hundreds are ready to take his place. No others than those directly interested will trouble themselves to see that the laws are enforced, and those interested, as above stated, are powerless to do so. These laws were enacted by the Legislature for wise purposes, and it is to the interest, not only of the wage-worker, but of all the citizens of the State, that wise laws should not only be passed but observed. The non-enforcement of law is demoralizing in its tendency in lessening general respect for law. An unjust law should not be passed by the Legislature, but when laws are passed they should be enforced, and, if found impracticable or grinding, they should be repealed.

Proposed Appointment of Inspectors.

For the purpose of enforcing the laws passed in the interest of labor, I would recommend the passage of an act by the Legislature authorizing the appointment by the Governor of not less than three inspectors, who shall have police powers, with the right and duty to inquire into the observance and enforcement of the statutes regulating the condition of mines, factories, shops, etc. That such inspectors shall be invested with full power to make investigations, institute and maintain prosecutions for violations of law, collect and return fines now or hereafter to be imposed. Quarterly and annual reports should be made by the inspectors to the Secretary of Internal Affairs. The reports should give the names of the owners of the factories and work-shops visited, the general condition of the establishments, the number of operatives employed, and the names and ages of those under sixteen years. These reports should be published annually by the chief of the Bureau of Industrial Statistics, and incorporated in his report. I feel the more confidence in recommending the passage of such an act from the fact that a law substantially the same has been and is in force in the State of Massachusetts, and, as I have been informed, with excellent results.

Decennial Census.

The work of this Bureau could be made more complete and of greater utility, and at the same time the interests of the State advanced, were a complete census made by legislative authority once in every ten years—the time for the taking of the census to be fixed at the end of the fifth year next following the general census made by the United States Government. This would practically give to the Commonwealth a complete census every five years. In the rapid advance of modern civilization, an ever-present knowledge of the development of the resources of this great Commonwealth, its industries, and the condition of the people is of the greatest importance.

There is no law of this character in any State of the Union except Massachusetts. In that State it is claimed that the resultant good has far more than justified the expenditure of the money in taking the census. If the practical result is beneficial, as is claimed in Massachusetts, it can readily be seen that it would be of far more importance in Pennsylvania, with its larger extent of territory and greater and more varied resources and diversified industries. I would therefore recommend that the Legislature appropriate to this Bureau a sum of money sufficient to make a census of the population and industries of the State. The report on population to show age, sex, and color, the nature of the occupations of the people, the proportion of each sex to the other, the number and ages of minor children, the number of pupils attending the common schools, and the number and sex of persons unable to read and write, with such other information as may be deemed necessary and advisable.

Industrial Schools.

While the demand for skilled labor is increasing, the supply from the native population is diminishing year after year. At the present time statistics show that the great bulk of the more skillful mechanics employed here were born and educated abroad. The lessening number of skilled American mechanics is partly owing to the fact that the apprentice system as recognized in former years has become obsolete. The introduction of machinery has greatly changed the character of the labor required; the machine in many things takes the place of manual labor. What was in former years a single industry is now often divided into a number of parts. It has become next to impossible, owing to the sub-division of labor consequent upon the introduction of machinery, for a boy to learn a trade as was understood in past years. Under the circumstances, laws passed to prevent the importation of foreign skilled workmen cannot be enforced without damaging results until there is a sufficient amount of American labor to take their places. The natural inventive skill of the American, his artistic taste and graceful workmanship, have become a proverb. It is essential to the welfare of the country that the mechanical capacity of the native-born population should be stimulated. The prizes of the future will not be for the office-holder, or the average lawyer or physician, but to those eminent in the mechanical arts and sciences. In this age of electricity, and in the demand for new and more perfect designs, a new field is being opened to the youth of the land commensurate with the aspirations of the most ambitious.

The mechanical training of our youth has become a question of vital importance. The establishment of industrial schools by the State would do much, but a thorough revision of our common school system would do more. Seven tenths of those graduating from the common schools drift into mines, manufactories, and workshops without having received an hour's instruction in mechanical drawing or the use of tools. The great mass of the people must necessarily acquire a livelihood by manual labor. The common school is for the benefit of the masses, not for the few, and the system of education should be so designed. Of what are termed the higher branches taught in our public schools, a mere smattering is acquired, and the hours devoted to the study of the classics are, for the most part, precious time wasted. How to educate our youth in the mechanical arts is a subject of vital importance and worthy of the earnest attention of the Legislature.

Anthracite Mine Commission.

The report of the commissioners appointed to revise the mining laws relating to the anthracite coal mines has, at this writing, been indorsed by the State Senate, and will probably, with a few amendments, become a law. In that event, the anthracite mine inspectors will hereafter report to the Secretary of Internal Affairs, and their returns will be published in connection with the bituminous report of this Bureau. The report of the commissioners shows a very careful revision, and suggests some valuable

amendments to the old law. The recommendation that foremen at the mines should be required to pass an examination and be appointed by reason of their practical and theoretical knowledge of mining, and the causes and means of prevention of the accidents incident to mining, is an important one, and, if agreed to, will result in the adoption of greater skill in mining as well as in the diminished danger of mining accidents. The system of mine inspection has already been productive of much good, and it would be a source of much regret should the office be interfered with, or the inspectors in any way hampered in the execution of their duties. The system may not be perfect, but every movement made to improve it has not only been in accord with the intent and purpose of the original law, but is also in consonance with the provisions existing in the laws of England and Germany, and approved by the great body of miners and mine operators in those countries.

Bituminous Mine Commission.

In accordance with the law passed at the last regular session of the Legislature, a commission has been appointed to revise the laws relating to bituminous coal mines. Recent accidents in those mines render evident the importance of more rigid inspection and more certain prosecutions of willful violations of the mine laws. The mine inspectors at present make monthly reports to this Bureau. This is not only unnecessary, but interferes with the more important duties of inspection. I would recommend that in lieu of such monthly statements quarterly and annual reports be made. When practicable, such reports should be in tabular form, and in the alphabetical order of mines in each district. The annual table should give the average number of employés for the year, the total production of coal and coke, the number of coke ovens, and the total amount of wages paid. All the tables and written matter should be in methodical form, without redundancy in words or figures, and in such shape as would warrant the Bureau in sending it direct to the printer. The annual reports should be for the year ending December 31, so as to be uniform with those of the anthracite mine inspectors. All original reports are preserved in this Bureau for future reference.

Method of Collecting Statistics.

This Bureau has received many letters commending its work during the past year. Many suggestions have been made, several of these of infinite value, but which the Bureau, as organized, cannot act upon. A return to the old plan of publishing the names of the operators, with the extent of business done by each for the preceding year, has been urged by two prominent statisticians residing in different parts of the State. With the utmost respect for the gentlemen referred to, I cannot indorse their suggestions. The publication of the names would simply gratify curiosity without any corresponding good. The business of this Bureau is necessarily inquisi-

torial, and, therefore, frank, truthful answers are expected and required. Reliable information would not be so easily obtained were it supposed that the details of private business would be published. This Bureau is neither an advertising agency for firms or individuals, nor is it willing to injure its correspondents, as sometimes might be the case, in publishing individual reports. The aggregate result in wages and number of employés, the value of products, etc., for each industry, by counties, are sufficient for the purpose for which this Bureau was created. The great majority of those to whom blanks are sent are opposed to having their answers published in connection with their names. Their wishes should and will be respected. It is important for the purposes of this Bureau that all possible information should be acquired bearing "upon the social, educational, and industrial welfare of all classes of working people." Unless clearly for the public welfare, it would not only be unjust, but inexpedient, to publish the business and opinions of firms and individuals, when a compilation of these statistics by counties will answer every purpose intended.

Second Annual Convention of Chiefs of Bureaus.

The second annual convention of the chiefs of the State Labor Statistical Bureaus of the United States began in the city of St. Louis, Missouri, on the 9th of June, 1884, and continued in session for several days. These national conventions have already been productive of much good, enabling the heads of the several State departments to compare notes and methods, the better to harmonize and systematize the labor of each Bureau, to the end that the work of all may be governed as much as possible by the same object, and secure results which may be useful for the purposes of comparison.

The Reports on Pullman.

By a resolution passed at the last annual convention of the Chiefs of Bureaus, it was determined to make a full and exhaustive investigation of the social and economic experiment of the Pullman Palace Car Company, on the plan projected and carried out by Mr. George M. Pullman. The result of my observations to the Secretary of Internal Affairs, as well as the joint investigation of the commission on this question, will be found in full in this report.

JOEL B. McCAMANT,
Chief of Bureau.

WAGES IN GREAT BRITAIN AND PENNSYLVANIA.

Recent political and industrial agitations having brought the question of wages prominently before the public, we determined to obtain, if possible, a comparative table of wages paid wage-workers in like industries in Pennsylvania and Great Britain.

In former reports of this bureau, the wages of employés in Pennsylvania have been presented. The difficulty of obtaining accurate and reliable statistics relative to wages paid operatives in Great Britain may be imagined by those acquainted with the fact that the appropriation necessary to an entirely original investigation of the subject-matter has never been extended to this bureau.

Such information as we are able to give has been gleaned from tables prepared by the Massachusetts Bureau of Statistics; "The Wages Question," by Francis A. Walker; "The Balance Sheet of the World," by Michael G. Mulhall, F. S. S.; "A Dictionary of Statistics" and "The Progress of the World," by the same learned author; "Labor in Europe and America," by Honorable Edward Young, Chief of the United States Bureau of Statistics; the report of Honorable Frederick T. Frelinghuysen, Secretary of State, and the United States Census of 1880. There is no dearth of wages statistics such as have been presented to the public by men who have some pet idea of political economy to sustain, but statistics compiled for such a purpose, it is hardly necessary to say, are of no value to the general public, however much they may add to the notoriety of those who place more value on victorious argument than on hard, cold facts.

We have been unable to discover, in all the mass of testimony relative to the wage question in Great Britain, the basis upon which the wage-tables presented depend. Most writers on the wage question are carried away with the idea, in the computation of wages by the year, that three hundred days is the unit of working time. And those who see the fallacy of this basis, for some purpose known only to themselves, and merely suspected by others, have resorted to the thin subterfuge of presenting weekly and daily wages, always leaving the impression that the one is to be multiplied by fifty-two, and the other by three hundred, at least. In the matter of the wage-tables of Great Britain, we, as before said, have no certainty as to the number of days made use of as the unit of time, but in Pennsylvania, the rule we have worked on—and it is the onlytrue one—is the rule

that requires the computation to be based on the actual number of *days worked;* because, as in matter of business practice, wages are withheld during idleness, it does not become the statistician to pay in theory what is never paid in practice. Our object is to present the rate of wages in figures based upon actual working time.

The low rates of wages paid to working men and women in Pennsylvania will not appear startling to those acquainted with the fact that wage-workers do not average more than two thirds time in any but the very best and most prosperous of years, and from the best and most reliable information, the fact presents itself that, in the host of wage-workers, not one in ten of adult males receives wages sufficient to enable them to save against the day of idleness. Let it not be supposed that the wage-workers of Pennsylvania are worse off than their brothers and sisters in other States of the Union. Our miners will compare favorably with miners of other sections of this country, and our iron-workers and mechanics generally receive more wages *per diem* than are given to workingmen in like industries in any of the Eastern States. If the tables of wages paid do not substantiate the foregoing assertion, the reason for the discrepancy in wages paid in this and other States may be rightly accounted for by assuming that the rates of wages, as presented by the reports of other States, make no allowance for time lost. All the comparative wage-tables which have come under our notice make no allowance for loss of time, but, on the contrary, the tables for weekly wages are but the tables of daily wages multiplied by six.

A notable instance of this may be found on page 183 of the report of Mr. Secretary Frelinghuysen on labor in Europe. In giving the weekly wages at the Chicago rolling-mills, he bases all his estimates on full time, and the result is a wage-table at total variance with actual facts—a table of wages that would make the English iron-worker, could he see it, green with envy, and impatient with dull delay which would interpose between him and his longing to arrive at this modern Mecca for wage-workers—Chicago.

In the compilation of the tables of wages paid to wage-workers in the several industries of Pennsylvania, we have deemed it proper to travel out of the beaten path; therefore, we present three several tables of wages in each industry. Table 1 shows the highest rates of wages paid per diem, multiplied by six full working days, to show the highest weekly wages, and this multiplied by fifty-two to show the highest annual wages. Table 2 gives the average daily wages, multiplied by the number of days actually employed per annum, and this product divided by fifty-two, to show the actual weekly wages paid and received. Table 3 shows the actual average weekly wages paid to all the wage-workers in a given industry, supposing the annual wages paid to all to have been divided equally.

In preparing comparative wage-tables, the great difficulty has been to harmonize the technical terms applied to wage-workers in like industries

in Europe and the United States. In most cases this was found to be impossible, and, therefore, we give the technical names as obtained from consular and other reports, with the hope that some of the wage-workers in this country who have been employed in Europe will be able to do that which all statisticians have left undone, viz: reduce the technical names of wage-workers in Europe and the United States to some certain status common to wage-workers in both countries who are engaged in similar occupations. Until this will have been done, comparative wage-tables will remain enigmas to the great majority of those who interest themselves sufficiently to read them.

In the preparation of these tables, we have had in view the great dislike which most people feel to reading pages of statistics which follow each other in consecutive and endless order; therefore, we have incorporated the statistical tables with that part of the reading matter which would best explain the peculiarities incident to the particular industry to which the tables apply.

The chief industry, and the one employing the greatest number of wage-workers in Pennsylvania, is that of coal-mining, which employs at different seasons from 120,000 to 140,000 miners, mechanics, and other laborers. The proportion of employés in the anthracite mines compared to those employed in the bituminous coal fields is about eighty-eight to forty-five, but owing to the recent new developments in the bituminous regions of the State, the proportion will be reduced inside of two years to about eighty to fifty. The tables of wages subjoined have been prepared from the reports of operators employing about 82,000 wage-workers in the anthracite coal mines and about 37,000 wage-workers in the bituminous coal mines.

The great difference shown in the tables between theoretical wages and actual wages is to be accounted for by the difference actually existing between theoretical working time and actual time employed. This difference amounts to one hundred and twenty-eight days in the anthracite and one hundred and ten days in the bituminous coal fields. The wage-worker who lives one year must of necessity sustain himself and those dependent upon him for a period of three hundred and sixty-five days. If from this are deducted fifty-two Sundays and six holidays, there would be left three hundred and seven days in which the wage-worker could pursue his calling. If fractions of a week are ignored, holidays and Sundays entail a loss of working time equivalent to ten weeks; or in other words, a wage-worker must sustain himself and his dependents for a period of fifty-two weeks on wages received for labor performed during forty-two weeks. Unfortunately, the reduction in working time does not end with Sundays and holidays, for to these reductions must be added time lost during sickness, fluctuations in trade, and disagreements between employer and employed, which, however much to be deplored, demand, nevertheless, the consideration of the statistician.

TABLE 1.—*Exhibit of highest average wages paid in the anthracite coal mines of Pennsylvania, based on full working time.*

Theoretical wages.	Day.	Week.	Year.
Employés.			
Miners on contract,	$2 70	$16 20	$842 40
Miners on wages,	2 00	12 00	624 00
Laborers, inside,	1 78	10 68	555 36
Laborers, outside,	1 40	8 40	436 80
Boys,	65	3 90	202 80
Drivers and runners,	1 43	8 58	446 16
Firemen,	1 58	9 48	492 96
Engineers,	1 88	11 28	586 56
Blacksmiths,	1 91	11 46	595 92
Slate-pickers, boss,	1 55	9 30	483 60
Slate-pickers, boys,	50	3 00	156 00

TABLE 2.—*Exhibit of actual wages paid in the anthracite coal mines of Pennsylvania, based on actual time employed.*

Actual wages.	Day.	Week.	Year.
Employés.			
Miners on contract,	$2 70	$8 84	$459 68
Miners on wages,	2 00	7 00	364 00
Laborers, inside,	1 78	6 14	319 28
Laborers, outside,	1 40	4 91	255 32
Boys,	65	2 07	107 64
Drivers and runners,	1 43	5 32	276 64
Firemen,	1 58	5 73	297 96
Engineers,	1 88	8 84	459 68
Blacksmiths,	1 91	7 16	372 32
Slate-pickers, boss,	1 55	5 60	291 20
Slate-pickers, boys,	50	1 70	88 40

The above tables of wages for wage-workers in the anthracite coal mines are proof of the position assumed. In the single instance of miners on contract, there is an actual loss of $382 72 during the year, because the working time was limited to a number of days far less than the time allowed, deducting Sundays and holidays only. The same condition, it will be observed, exists in the rates of wages received by the other wage-workers. The rule that like causes produce like effects will hold good in the matter of wages received by wage-workers in the bituminous coal mines, as the sub-joined tables will show.

TABLE 1.—*Exhibit of highest average wages paid in the bituminous coal mines of Pennsylvania, based on full working time.*

Theoretical wages.	Day.	Week.	Year.
Employés.			
Miners,	$2 00	$12 00	$624 00
Laborers, inside,	1 75	10 50	546 00
Laborers, outside,	1 60	9 60	499 20
Mule-drivers,	1 75	10 50	546 00
Blacksmiths,	2 00	12 00	624 00
Coke-oven chargers,	1 70	10 20	530 40
Coke-oven drawers,	1 65	9 90	514 80
Mine boss,	2 80	16 80	873 60
Carpenters,	1 75	10 50	546 00
Clerks,	2 25	13 50	702 00
Boys,	60	3 60	187 20

TABLE 2.—*Exhibit of actual wages paid in the bituminous coal mines of Pennsylvania, based on actual time employed.*

Actual wages.	Day.	Week.	Year.
Employés.			
Miners,	$2 00	$7 10	$369 20
Laborers, inside,	1 75	6 30	327 60
Laborers, outside,	1 60	5 61	291 72
Mule-drivers,	1 75	6 20	322 40
Blacksmiths,	2 00	7 20	374 40
Coke-oven chargers,	1 70	6 04	314 08
Coke-oven drawers,	1 65	5 68	305 36
Mine boss,	2 80	12 00	624 00
Carpenters,	1 75	7 00	364 00
Clerks,	2 25	10 00	520 00
Boys,	60	2 70	140 40

The tables showing theoretical and actual wages paid in the anthracite and bituminous coal mines have been further summarized by showing the actual loss in difference between the wages actually paid per week and

those wages paid theoretically for the same period. Looking at the result, and it is one that has been obtained after full and impartial investigation, we are forced to the conclusion that more steady and certain employment throughout the year to employés in the coal fields of Pennsylvania would be more beneficial to the wage-workers than would a nominal rise in daily wages. Not that we think that the present daily wages is sufficient, but rather that the daily wages paid under the present system of broken time is calculated to deceive the wage-workers themselves, who, for the most part, forget the past danger of uncertainty in their employments, and, with generous hope, multiply their certain daily wages by a certain full time—which, alas! never comes.

Exhibit of actual weekly wages paid employés in anthracite coal mines of Pennsylvania.

EMPLOYEES.	Wages.
Miners on contract,	$8 84
Miners on wages,	7 00
Laborers, inside,	6 14
Laborers, outside,	4 91
Boys,	2 07
Drivers and runners,	5 32
Firemen,	5 73
Engineer,	8 84
Blacksmiths,	7 16
Slate-pickers, boss,	5 60
Slate-pickers, boys,	1 70

Exhibit of actual weekly wages paid employés in the bituminous coal mines of Pennsylvania.

EMPLOYEES.	Wages.
Miners,	$7 10
Laborers, inside,	6 30
Laborers, outside,	5 61
Mule-drivers,	6 20
Blacksmiths,	7 20
Coke-oven chargers,	6 04
Coke-oven drawers,	5 68
Mine boss,	12 00
Carpenters,	7 00
Clerks,	10 00
Boys,	2 70

Exhibit of difference between theoretical and actual wages paid per week in anthracite mines of Pennsylvania.

EMPLOYEES.	Wages—loss.
Miners on contract,	$7 36
Miners on wages,	5 00
Laborers, inside,	4 54
Laborers, outside,	3 48
Boys,	1 83
Drivers and runners,	3 26
Firemen,	3 75
Engineers,	2 44
Blacksmiths,	4 30
Slate-pickers, boss,	3 70
Slate-pickers, boys,	1 30

Exhibit of difference between theoretical and actual wages paid per week in bituminous mines of Pennsylvania.

EMPLOYEES.	Wages—loss.
Miners,	$4 90
Laborers, inside,	4 20
Laborers, outside,	3 99
Mule, drivers,	4 30
Blacksmiths,	4 80
Coke-oven chargers,	4 16
Coke-oven drawers,	4 22
Mine boss,	4 80
Carpenters,	3 50
Clerks,	3 50
Boys,	90

It must be confessed that the average weekly wages of Pennsylvania coal operatives is not calculated to admit of a saving-fund against the day of sickness or disaster, but he may be able to bear his burden with patient resignation by comparing his situation with that of his fellow wage-workers

in English collieries. The subjoined report of weekly wages paid to miners and others wage-workers in English collieries is taken from the report of Honorable Frederick T. Frelinghuysen, Secretary of State. The objection to the table is, that owing to the difference in technical names in England and Pennsylvania, as applied to wage-workers, none but the fortunate few, if any such there be, will understand it sufficiently well to make a proper comparison.

The question may be asked, "What is a 'hewer,' a 'deputy,' a 'hand-putter,' a 'pony-putter,' a 'reeker?' to what class of wage-workers in Pennsylvania do they correspond?" We are unable to determine. We give the table as it was presented in the Consular reports, with the hope that some one may be able to harmonize all difference in names applied to wage-workers.

Exhibit of weekly wages paid coal-miners and other employés in the mines in England from Consular reports:

	Weekly wages.
Employés.	
Hewers,	$6 72
Deputies,	6 60
Engineers,	5 88
Shifters,	4 68
Firemen,	4 02
Hand-putters,	5 86
Pony-putters,	4 56
Reekers,	5 24
Screeners,	4 20
Blacksmiths,	5 28
Laborers,	4 08
Coal drawers,	6 84
Coke-fitters,	5 76
Coke laborers,	4 44
Furnace men,	3 84

This table of wages is based upon statistics of wages obtained in Durham and Northumberland counties, England. These counties contain 80,127 wage-workers in and about coal mines, but a few thousand less than the number employed in and about the anthracite mines of Pennsylvania.

The report of the Consul says: "*The majority of the foregoing laborers, that is, all the married men, with the exception of putters and cokemen, are given houses rent free and coal, each paying twelve cents per fortnight for loading the coal.*" The wage-workers in and about the mines of Pennsylvania are not as fortunate in the matter of house rent. In many, if not in most, of the mining districts of this State, the wage-workers live in houses owned by the companies, for which they pay an average rent of $5 per month. We have no trustworthy information relative to the time wages are withheld in England. Statements have been made in which the time has been given, but these statements vary from "once a week" to

"once a fortnight." The rule in Pennsylvania is to withhold the bulk of the wages for a period of one month before paying, and, in some cases, a certain percentage of wages is withheld as a guarantee fund against the violation on the part of the miners of certain "iron-clad contracts," so-called, which are, in most instances, framed to evade laws passed for the better protection of miners.

In conclusion, we must admit that the advantages enjoyed by the wage-workers in Pennsylvania coal mines over their brothers in English collieries do not appear on the surface, though it is possible that further inquiry may yet serve to bring those advantages to light.

Wages in the Iron Industry.

The wage-workers connected with the manufacture of iron and steel in Pennsylvania number in good business seasons about 65,000. The rates of wages vary according to locality. The counties of Allegheny, Armstrong, Beaver, Erie, Lawrence, Mercer, and Westmoreland, where the rates are governed by what is known as the "sliding scale," are the counties in which the highest wages are paid. In the counties of Berks, Bucks, Chester, Columbia, Cumberland, Dauphin, Delaware, Lackawanna, Lancastor, Lebanon, Lehigh, Mifflin, Montgomery, Montour, Northumberland, Perry, Philadelpha, and Schuylkill, the wages paid are considerably lower. The division of these counties we will call the Western district, and the latter the Eastern. The majority of skilled wage-workers in the Western district are members of a labor organization known as the "Amalgamated Steel and Iron Association." This association, through its delegates, meets in May, of each year, with a body of delegates representing the interests of the employers. The question of prices and wages is amicably discussed and the result is a scale of wages adopted which is seldom violated by either party.

This scale remains in force for one year or till a new scale will have been adopted.

It would require an unlooked-for and extraordinary combination of circumstances to change a scale of wages during the year for which it was intended to apply, and though such an event may have occurred, we are not in possession of any such information.

Within the past year, a great deal has been said and written concerning the rates of wages paid to wage-workers in the iron industries in England and in Pennsylvania. All of this stuff was prepared by men who had special hobbies and pet theories to advance or sustain. Advocates of high tariff and expounders of free-trade sentiments—all had special wage-tables prepared to suit their purpose.

It is hardly necessary for us to add that, in the preparation of the wage-tables here presented, the question of free trade and high tariff has been utterly ignored. Tariffs are levied to raise revenue and at the same time prevent competition that would be ruinous to home industries; and in the

matter of competition the question of difference in rates of wages paid at home and abroad is but one of many factors which necessarily enter into the solution of the problem. Insurance, rents, borrowing rates for money, transportation, skill in labor, perfection in machinery, soil and climate, density of population, cost of living, and other major and minor questions too numerous here to mention are woven and interwoven into the vexed problem of how to lessen competition so that any table of wages that may be prepared cannot be used intelligently and honestly as a sure indicator of the relative cost of production at home and abroad. The reports of consuls would be more satisfactory had special tables been presented by them giving rates of wages in blast-furnaces, rolling-mills, bloomaries, &c.

This was not done, and, therefore, the comparative wage-table cannot be made with that completeness which the importance of the question under discussion may justly claim.

The report of consul says: "Either from the different labor systems which prevail in these industries, or from the different technical terms made use of in describing the several branches of employment, it is impracticable to prepare a detailed comparative table of the exact conditions which prevail in the iron works in Europe and in the United States."

The reports of consuls show the highest averages of wages paid in Birmingham, Hull, Holyhead, and New Castle—the highest in Europe. We here present it in connection with an exhibit of the highest average weekly wages paid to similar wage-workers in Pennsylvania.

Exhibit showing highest average weekly wages paid to wage-workers of similar character in England and in Pennsylvania.

EMPLOYEES—ENGLAND.	Weekly wages.	EMPLOYEES—PENNSYLVANIA.	Weekly wages.
Puddlers,	$10 14	Puddlers,	$19 00
Puddlers' underhand,	5 52	Puddlers' helpers,	11 75
Hammerers,	19 26	Hammermen,	14 40
Hammerers' assistants,	8 10	Hammermen's assistants,	7 50
Rollers,	17 74	Rollers,	30 00
Rollers' assistants,	5 88	Rollers' assistants,	
Coal wheelers,	5 42	Coal wheelers,	7 25
Chargers,	5 88	Chargers,	15 00
Laborers,	4 32	Laborers,	7 00
Boilermen,	5 64	Boilermen,	
Engineers,	8 70	Engineers,	12 25
Holders-up,	8 00	Holders-up,	9 00
Drillers,	7 00	Drillers,	12 50
Strikers,	6 25	Strikers,	7 50
Pattern-makers,	11 50	Pattern-makers,	15 00
Molders,	11 50	Molders,	14 40
Boiler-makers,	10 50	Boiler-makers,	15 00
Riveters,	9 60	Riveters,	10 50

The wages paid to wage-workers in the iron industries of Pennsylvania are different in different localities, and the better to disarm unfair criticism as well as to present a more complete statement of wages, tables are given, which exhibit the rates of wages paid by rolling-mill operators in three

mills in Allegheny county, three mills in Blair county, and three mills in Chester county:

Allegheny.

OCCUPATIONS.	No. of employés in three mills.	Average daily wages.	Average daily wages.	Average daily wages.
Puddlers,	150	$3 78	$3 75	$3 50
Puddler's helpers,	150	2 35	2 35	2 25
Heaters,	42	5 93	4 50	4 50
Heaters' helpers,	36	1 65	1 75	2 00
Bar-rollers,	7	9 50	10 00	6 50
Guide-rollers,	4	10 00	12 50	7 50
Sheet-rollers,	7	9 00	16 00	10 00
Muck-rollers,	8	8 00	18 75	6 50
Roughers,	25	3 00	4 00	2 25
Catchers,	25	3 00	4 00	2 50
Hookers,	17	1 70	1 60	1 50
Straighteners,	22	2 00	1 62	1 25
Shearmen,	26	1 60	2 00	1 50
Engineers,	15	2 25	2 30	2 75
Millwrights,	5	4 00	3 00	3 00
Blacksmiths,	7	2 75	2 28	2 75
Machinists,	4	2 50	. . . .	2 25
Carpenters,	4	2 25	2 25	
Firemen,	17	1 60	1 87	1 85
Laborers,	555	1 25	1 35	1 20
Boys,	37	60	65	75

Blair.

OCCUPATIONS.	Number of employés.	Average daily wages.	Average daily wages.	Average daily wages.
Puddlers,	69	$2 33	$2 66	$3 00
Puddlers' helpers,	69	1 17	1 33	1 50
Heaters,	11	6 63	3 00	5 00
Heaters' helpers,	9	1 75	2 40	1 75
Bar-rollers,	2	3 87	. . . .	6 00
Guide-rollers,	7	8 45	7 00	7 00
Sheet-rollers,	1	. . . .	2 00	
Muck-rollers,	4	2 34	2 00	3 00
Roughers,	18	2 75	2 75	2 50
Catchers,	10	1 82	1 50	2 50
Hookers,	8	82	75	1 50
Straighteners,	12	1 70	1 10	90
Shearmen,	14	1 32	1 38	1 30
Engineers,	8	1 50	1 30	2 50
Millwrights,	2	. .	1 75	2 50
Blacksmiths,	7	1 88	2 15	2 00
Machinists,	1	2 25		
Carpenters,	4	2 00	1 75	
Nailers,	5	. . . .	4 75	
Feeders,	30	. . .	1 00	
Firemen,	9	1 35	1 10	1 25
Laborers,	53	1 10	1 05	1 20
Boys,	28	50	75	60

Chester.

OCCUPATIONS.	Number of employés.	Average daily wages.	Average daily wages.	Average daily wages.
Puddlers,	116	$2 66	$3 25	$2 80
Puddlers' helpers,	114	1 33	1 55	1 40
Heaters,	54	4 00	2 75	3 00
Heaters' helpers,	54	2 00	1 35	1 25
Bar-rollers,	17	....	1 49	
Guide-rollers,	9	....	3 15	
Sheet-rollers,	12	....	....	1 50
Muck-rollers,	4	2 50	1 73	
Roughers,	6	..	1 59	
Catchers,	62	1 75	1 24	1 25
Hookers,	64	1 75	1 12	
Straighteners,	28	1 75	2 10	1 25
Shearmen,	12	2 50	..	1 75
Engineers,	23	3 00	1 95	1 54
Millwrights,	3	....	1 75	1 50
Blacksmiths,	45	3 00	2 15	1 71
Machinists,	44	4 00	2 25	2 25
Carpenters,	28	2 50	2 20	
Firemen,	8	....	1 40	1 25
Laborers,	450	1 20	1 12	1 00
Boys,	154	....	80	80

The foregoing tables of wages paid in rolling-mills show the highest and lowest daily wages paid to skilled and unskilled labor, and the proportion of skilled to unskilled wage-workers. The tables are made from actual reports made to the bureau by operators.

The highest average working time for 1884 was two hundred and twenty-one days in Pennsylvania rolling-mills. It may be said that the year 1884 was one of general depression, and, therefore, that the actual working days for that year would present a showing greatly below the average, but this charge cannot be substartiated, for a careful perusal of the history of the iron industry of Pennsylvania for the past ten, or even twenty years, will prove conclusively that even a less number of working days than two hundred and twenty-one has been the average per annum during that time. Twenty years at wage labor should enable the average wage-worker to retire from hard labor, and so they might, and perhaps would, had those years afforded them the opportunity of constant employment, but the reverse of this has been the rule, and the great body of wage-workers in the iron industries of Pennsylvania have been repeatedly compelled, by want of employment, to draw upon and exhaust the little fund which had been saved from wages earned by former hard and unceasing toil.

Exhibit showing the highest average wages paid wage-workers in the rolling-mills of the western district of Pennsylvania, based upon full time.

Theoretical Wages.

EMPLOYEES.	Daily wages.	Weekly wages.	Annual wages.
Puddlers,	$3 50	$21 00	$1,092 00
Puddlers' helpers,	2 20	13 20	686 00
Heaters,	5 00	30 00	1,560 00
Heaters' helpers,	1 70	10 20	530 00
Rollers,	7 00	42 00	2,184 00
Roughers,	3 00	18 00	936 00
Catchers,	3 00	18 00	936 00
Hookers,	1 50	9 00	468 00
Straighteners,	1 70	10 20	530 00
Shearmen,	1 70	10 20	530 00
Engineers,	2 25	13 50	702 00
Millwrights,	3 00	18 00	936 00
Blacksmiths,	2 50	15 00	780 00
Machinists,	2 25	13 50	702 00
Carpenters,	2 25	13 50	702 00
Nailers,	7 50	45 00	2,340 00
Feeders,	1 75	10 50	546 00
Firemen,	1 50	9 00	468 00
Laborers,	1 25	7 50	390 00
Boys,	65	3 90	202 00

Exhibit showing the actual average wages paid wage-workers in the rolling-mills of the Western District of Pennsylvania, based upon actual working time.

Actual Wages.

EMPLOYEES.	Weekly wages.	Annual wages.
Puddlers,	$13 00	$777 00
Puddlers' helpers,	8 14	488 00
Heaters,	18 50	1,110 00
Heaters' helpers,	6 29	377 00
Rollers,	26 00	1,554 00
Roughers,	11 00	666 00
Catchers,	11 00	666 00
Hookers,	5 55	333 00
Straighteners,	6 29	377 00
Shearmen,	6 29	337 00
Engineers,	8 32	499 00
Millwrights,	11 00	666 00
Blacksmiths,	9 25	555 00
Machinists,	8 32	499 00
Carpenters,	8 32	499 00
Nailers,	28 00	1,665 00
Feeders,	6 48	388 00
Firemen,	5 55	333 00
Laborers,	4 62	277 00
Boys,	2 60	144 00

The above exhibit, having been taken from returns made to this bureau from operators in the Western district, shows the highest average wages paid. The wages paid in the Eastern district are much below this average, as the subjoined tables of wages paid in both districts will show.

EXHIBIT *of average daily wages paid wage-workers in the rolling-mills of the Eastern and the Western Districts of Pennsylvania, from 1873 to 1883, inclusive.*

EASTERN DISTRICT, *comprising the counties of Berks, Bucks, Chester, Columbia, Cumberland, Dauphin, Delaware, Lackawanna, Lancaster, Lebanon, Lehigh, Mifflin, Montgomery, Montour, Northampton, Northumberland, Perry, Philadelphia, and Schuylkill.*

OCCUPATIONS.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Rolling-Mills.											
Puddlers,	$4 00	$3 60	$3 11	$2 78	$2 40	$2 40	$2 53	$2 80	$3 03	$3 03	$2 72
Puddlers' helpers,	2 25	2 00	1 57	1 51	1 35	1 27	1 32	1 40	1 60	1 60	1 45
Heaters,	5 00	4 70	4 60	3 26	3 10	3 03	3 03	4 20	3 81	3 81	3 60
Heaters' helpers,	2 35	2 30	2 25	1 71	1 50	1 55	1 55	1 60	1 50	1 50	1 79
Rollers,	5 00	4 50	4 00	3 68	3 05	3 12	2 95	4 70	4 69	4 69	4 21
Roughers,	2 50	2 50	2 45	1 88	1 75	1 60	1 57	1 89	2 56	2 56	2 36
Catchers,	2 50	2 50	2 33	1 88	2 40	1 51	1 57	1 76	2 06	2 06	1 74
Hookers,	1 90	1 80	1 75	1 23	1 80	1 15	1 22	1 20	1 25	1 25	1 15
Shearman,	. . .	. . .	1 43	1 67	1 58	1 40	1 41	1 55	1 50	1 50	1 33
Straighteners,	. . .	. . .	1 43	1 67	. . .	1 56	1 56	1 48	1 50	1 50	1 58
Engineers,	. . .	. . .	2 54	1 87	2 25	1 72	1 90	1 90	2 00	2 00	1 75
Millwrights,	. . .	. . .	. . .	. . .	. . .	. .	2 00	2 18	2 17	2 17	2 16
Blacksmiths,	. . .	. . .	2 24	2 06	1 82	1 73	1 71	1 75	1 96	1 96	2 06
Machinists,	. . .	. . .	2 56	2 02	2 52	2 00	2 08	2 17	2 17	2 17	2 35
Carpenters,	. . .	. . .	2 37	1 92	1 80	1 59	1 43	1 58	1 67	1 67	1 83
Nailers,	. . .	. . .	. . .	. . .	. . .	. . .	4 10	. . .	3 64	3 64	3 54
Feeders,	. . .	. . .	. . .	. . .	. . .	1 12	1 20	1 10	1 17	1 17	1 13
Firemen,	. . .	. . .	. . .	1 34	. . .	1 17	1 23	1 16	1 50	1 50	1 52
Laborers,	. . .	. . .	1 12	1 20	1 13	1 00	1 10	1 11	1 15	1 15	1 17
Boys,	. . .	. . .	75	80	. . .	57	70	63	69	69	60

WESTERN DISTRICT, *comprising the counties of Allegheny, Armstrong, Beaver, Erie, Lawrence, Mercer, and Westmoreland.*

OCCUPATIONS.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Rolling-Mills.											
Puddlers,	$4 75	$4 11	$3 60	$3 00	$3 30	$3 30	$3 30	$3 57	$3 59	$3 59	$3 59
Puddlers' helpers,	2 95	2 55	2 25	1 90	2 00	2 00	2 00	2 20	2 23	2 23	2 23
Heaters,	6 10	5 70	5 60	4 00	4 70	4 70	4 70	5 20	5 01	5 01	5 01
Heaters' helpers,	2 60	2 30	2 00	1 63	1 63	1 80	1 74	1 75	1 74	1 74	1 74
Rollers,	8 50	8 25	8 00	7 24	6 50	6 40	6 40	7 00	7 24	7 24	7 24
Roughers,	4 20	3 80	3 30	2 65	2 25	2 25	2 70	3 25	3 15	3 15	3 15
Catchers,	4 25	3 80	3 30	2 65	2 25	2 95	2 70	3 25	3 36	3 36	3 36
Hookers,	2 00	1 85	1 75	1 52	1 25	1 44	1 60	1 44	1 50	1 50	1 50
Shearman,	. . .	. . .	1 43	1 88	1 75	1 60	1 62	1 60	1 74	1 74	1 74
Straighteners,	. . .	. . .	1 43	1 88	. .	1 62	1 48	1 52	1 74	1 74	1 74
Engineers,	. . .	. . .	2 54	2 66	1 83	2 37	2 57	1 87	2 66	2 66	2 66
Millwrights,	. . .	. . .	. .	. .	. .	3 03	2 76	2 24	2 92	2 92	2 92
Blacksmiths,	. . .	. . .	2 24	2 78	2 55	2 48	2 44	1 83	2 67	2 67	2 67
Machinists,	. . .	. . .	2 56	2 64	2 75	2 51	2 39	2 50	2 50	2 50	2 50
Carpenters,	. . .	. . .	2 37	2 33	2 25	1 76	1 87	1 61	2 16	2 16	2 16
Nailers,	. . .	. . .	. . .	. . .	. . .	6 25	6 00	. .	8 00	8 00	8 00
Feeders,	. . .	. . .	. . .	. . .	2 00	2 12	1 50	1 27	2 00	2 00	2 00
Firemen,	. . .	. . .	. .	1 70	1 66	1 64	1 55	1 29	1 74	1 74	1 74
Laborers,	. . .	. . .	1 12	1 28	1 25	1 12	1 27	1 14	1 31	1 31	1 31
Boys,	. . .	. . .	75	62	75	69	90	68	79	79	79

The blast furnaces of Pennsylvania give employment to about 13,000 wage-workers. They are, in general, kept in blast the full complement of working days, therefore it is not necessary to make an exhibit of theoretical and actual wages paid to wage-workers in this industry. A table is here presented, which shows the actual average wages paid throughout the State. There is a marked variance in wages paid in different localities and at different furnaces in the same locality, but we believe the following table to be as nearly correct as it is possible to make it.

EXHIBITS *showing the actual average wages paid wage-workers in the blast furnaces of Pennsylvania.*

EMPLOYEES.	Daily wages.	Weekly wages.	Annual wages.
Foundrymen,	$3 00	$18 00	$936
Keepers,	1 75	10 50	546
Keepers' helpers,	1 50	9 00	468
Fillers,	1 30	7 80	406
Cindermen,	1 25	7 50	390
Barrowmen,	1 30	7 80	406
Hot-blastmen,	1 50	9 00	468
Weighmen,	1 30	7 80	406
Metal-carriers,	1 50	9 00	468
Engineers,	1 75	10 50	546
Firemen,	1 25	7 50	390
Blacksmiths,	1 75	10 50	546
Blacksmiths' helpers,	1 30	7 80	406
Carpenters,	1 60	9 60	500
Laborers,	1 10	6 60	343
Foremen,	2 00	12 00	624
Other employés,	1 25	7 50	390

The bloomaries and forges of Pennsylvania employ about four hundred and fifty wage workers on an average. The past year the average time allotted to wage workers in this industry was twenty-nine weeks. As this is below the general average for the past ten years, the table of actual wages allows for thirty-three week, which is a fair general average of working time. Subjoined are two tables showing the theoretical and actual wages paid wage-workers in this industry:

EXHIBITS *showing the thoretical wages and actual wages paid wage-workers in the bloomaries and forges of Pennsylvania, based respectively on full time and actual time employed.*

Theoretical Wages.				Actual Wages.		
EMPLOYEES.	Daily wages.	Weekly wages.	Annual wages.	EMPLOYEES.	Weekly wages.	Annual wages.
Run-out men,	$3 50	$21 00	$1,092	Run-out men,	$11 55	$693
Forgemen,	2 50	15 00	780	Forgemen,	8 25	495
Helpers,	1 75	10 50	546	Helpers,	5 78	347
Hammermen,	2 40	14 40	749	Hammermen,	7 96	477
Hammermen's helpers,	1 25	7 50	390	Hammermen's helpers,	4 13	248
Engineers,	1 75	10 50	546	Engineers,	5 78	347
Blacksmiths,	1 60	9 60	499	Blacksmiths,	5 30	317
Carpenters,	1 50	9 00	468	Carpenters,	4 95	297
Laborers,	1 10	6 60	343	Laborers,	3 64	218
Boys,	60	3 60	187	Boys,	2 00	119
Other employés,	1 25	7 50	390	Other employés,	4 13	248

The Bessemer and crucible steel works of Pennsylvania employ about 13,000 wage-workers. We have no European wage-table with which to make a comparison. We therefore present the wage-tables of both industries in this State, with the explanation that no general reduction has taken place in wages since 1883. Some reductions were made, but not sufficient to materially alter the wages paid in 1883.

As in both of these industries there was an average of forty-eight full weeks of working time for the past year, it was not deemed necessary to present tables of theoretical and actual wages paid, as all the foregoing theoretical wage-tables were based on fifty-two weeks of full working time. We leave it for the more curious to make special reductions for the loss of four weeks in this instance.

EXHIBIT *showing rates of daily wages paid in the Bessemer and crucible steel works of Pennsylvania.*

Bessemer Steel.

OCCUPATIONS.	1880.	1881.	1882.	1883.
Converting Department.				
Superintendent,		$8 00	$8 00	$7 00
Foreman,	$5 00	5 19	5 19	4 22
Blowers,	2 50	3 96	3 96	3 75
Metal-handlers,	1 37	2 44	2 44	2 04
Metal-wheelers,		2 72	2 72	2 41
Weighmasters,	2 00	3 18	3 18	2 30
Hoist, hydraulic,	1 62	2 80	2 80	1 60
Stockers, iron, &c.,	1 87	2 55	2 55	2 50
Chargers,	2 12	3 88	3 88	3 00
Iron-melters,	3 50	4 97	4 97	4 04
Speigel-melters,		4 93	4 93	3 85
Speigel-melters' helpers,		3 04	3 04	2 42
Iron-melters' helpers,	2 25	2 88	2 88	2 70
Cindermen,	2 05	2 95	2 95	2 00
Runner-hands,	1 80	3 32	3 32	2 81
Converter-hands,	3 00	4 37	4 37	3 17
Converter-bottom builders,	2 30	3 00	3 00	2 65
Ladle hands and pit men,	2 10	3 89	3 89	3 30
Regulators,		1 91	1 91	2 27
Engineers,		1 83	1 83	1 89
Blooming Department.				
Foremen,		4 58	4 58	5 00
Heaters,	4 12	5 29	5 29	4 65
Heaters' helpers,	3 50	3 13	3 13	3 00
Door-hands,		1 50	1 50	1 20
Buggymen,		3 66	3 66	3 50
Markers,		1 95	1 95	1 40
Rollers,	2 87	4 15	4 15	4 54
Assistant rollers,	2 55	3 31	3 31	3 34
Screwmen,	2 50	3 62	3 62	4 00
Catchers,		3 06	3 06	3 10
Shearsmen,	2 50	2 77	2 77	2 95
Levermen,	2 25	3 25	3 25	2 75
Hammermen,	3 75	3 88	3 88	3 40
Engineers,		1 99	1 99	2 20
Drillers,	2 00	2 26	2 26	2 64
Chip and filers,	1 62	2 83	2 83	2 36
Telegraphers,		1 93	1 93	2 14
Straightening-press hands,	1 75	1 94	1 94	1 72
Inspectors,	1 62	2 88	2 88	2 04
Recorders,		2 44	2 44	2 50
Drillsmiths,		2 70	2 70	2 50
Rail-loaders,	2 12	2 75	2 75	2 78
Engineers,		1 87	1 87	2 00
Rail Department.				
Superintendent,		8 66	8 66	8 00
Heaters,	5 00	5 30	5 30	5 32
Heaters' helpers,	3 50	3 99	3 99	3 83
Chargers,	2 12	3 38	3 38	3 71
Drawers,		3 57	3 57	3 62
Door-hands,	1 25	1 20	1 20	1 17
Recorders,	2 12	2 08	2 08	2 06
Stockers,	2 00	2 15	2 15	2 07
Buggymen,	2 87	3 06	3 06	3 60
Roughers,	3 12	5 54	5 54	5 68
Second roughers,	2 80	5 06	5 06	5 00
Catchers,	2 90	3 87	3 87	4 89
Extra catchers,	2 37	2 50	2 50	3 17
Hookers,	2 62	3 47	3 47	4 32

OCCUPATIONS.	1880.	1881.	1882.	1883.
Rail Department—Continued.				
Hot clippers,	. . . .	$3 23	$3 23	$3 34
Strikers,	. . .	1 75	1 75	2 12
Drag-outs,	$2 20	2 25	2 25	1 97
Hydraulic hands,	. . . .	1 70	1 70	1 15
Clean-ups,	. . . .	1 60	1 60	1 45
Hot-bed hands,	2 00	2 48	2 48	3 09
Stampers,	1 37	2 55	2 55	2 58
Cold straighteners,	4 25	3 89	3 89	5 30
Gaggers,	2 75	3 16	3 16	3 14
Firemen,	. . . .	1 60	1 60	1 60
Forge Department.				
Foremen,	.	5 50	5 50	5 00
Heaters,	4 50	4 00	4 00	3 90
Heaters' helpers,	3 55	2 80	2 80	2 42
Door-hands,	1 40	1 20	1 20	99
Buggymen,	2 25	2 45	2 45	1 97
Hammermen,	5 00	4 00	4 00	3 50
Tongsmen,	2 50	2 50	2 50	2 25
Hookers, &c.,	2 00	2 50	2 50	2 25
Engineers,	. . .	2 50	2 50	2 00
Gas-Producing Department.				
Foremen,	3 75	3 25	3 25	2 92
Ashmen,	1 26	1 60	1 60	1 72
Firemen,	1 63	1 69	1 69	1 72
Locomotive Department.				
Foremen,	3 25	3 26	3 26	3 94
Weighmasters,	2 30	1 52	1 52	2 00
Hostlers,	90	1 34	1 34	1 50
Engineers,	2 05	2 03	2 03	2 20
Brakemen,	1 51	1 58	1 58	1 77
Steam-Producing Department.				
Foremen,	. . .	3 12	3 12	3 90
Water-tenders,	1 55	1 77	1 77	2 00
Assistant water-tenders,	. . . .	1 60	1 60	1 60
Monkeys,	. . . .	1 30	1 30	1 30
Ashmen,	1 26	1 40	1 40	1 50
Coal-heavers,	. . .	1 30	1 30	1 35
Firemen,	1 63	1 52	1 52	1 75
Miscellaneous Department.				
Machinists,	2 25	2 24	2 24	2 50
Machinists' helpers,	1 11	1 32	1 32	1 55
Blacksmiths,	2 20	2 30	2 30	2 48
Blacksmiths' helpers,	1 11	1 28	1 28	1 51
Carpenters,	1 68	2 13	2 13	2 16
Foundrymen,	2 37	1 76	1 76	1 75
Painters,	. . . .	2 00	2 00	2 10
Masons and bricklayers,	1 95	2 34	2 34	2 83
Masons' helpers,	1 22	1 26	1 26	1 59
Laborers,	1 12	1 32	1 32	1 25
Horses and carts,	. . . .	2 50	2 50	2 22
Boys,	. . . .	1 05	1 05	81

CRUCIBLE STEEL.

OCCUPATIONS.	1881.	1881.	1883.
Crucible and other steel.			
Steel-melters,	$5 57	$5 57	$5 50
Steel-melters' helpers,	2 73	2 73	3 21
Hammermen,	3 31	3 31	4 71
Hammermen's helpers,	2 05	2 05	2 28
Engineers,	2 38	2 38	2 54
Blacksmiths,	2 47	2 47	2 46
Carpenters,	2 21	2 21	2 06
Machinists,	2 58	2 58	2 46
Millwrights,	2 58	2 58	2 90
Firemen,	1 73	1 73	1 77
Laborers.	1 39	1 39	1 30
Shearsmen, straighteners, and builders,	1 78	1 78	2 20
Boys,	83	83	85
Wire drawers,	2 62	2 62	1 87
Other employès,	2 38	2 38	2 37

The mining of iron-ore does not afford constant employment, the average amounting to but thirty-six weeks per annum. This allows scarcely sufficient wages per week, for the run of the year, to maintain a single individual; how those wage-workers having families to maintain can accomplish that difficult task, is a problem in social economics that can be solved only by those who have been in similar circumstances. Many miners wear belts instead of suspenders to support the weight of their pantaloons, and one of these, in reply to the question asked him relative to his ability to buy food, replied: "Lord bless you, we don't always eat when we are hungry, *we just tighten our belts.*"

With the presentation of the following exhibit, we close the wage-tables on iron and consider the wages in the textile industries.

EXHIBIT *of theoretical and actual wages paid wage-workers in the iron-ore mines of Pennsylvania.*

	Theoretical Wages.			Actual Wages.		
EMPLOYEES.	Daily wages.	Weekly wages.	Annual wages.	EMPLOYEES.	Weekly wages.	Annual wages.
Miners,	$1 25	$7 50	$390	Miners,	$4 50	$270
Miners' helpers,	1 17	7 02	365	Miners' helpers,	4 20	250
Engineesr,	1 30	7 80	406	Engineers,	4 70	281
Foremen,	1 75	10 50	546	Foremen,	6 30	378
Blacksmiths,	1 40	8 40	437	Blacksmiths,	5 04	302
Laborers,	95	5 70	296	Laborers,	3 41	205
Boys,	50	3 00	156	Boys,	1 80	108
All others,	1 25	7 50	390	All others,	4 50	270

TEXTILE FABRICS.

The manufacturer of textile fabrics requires less skilled labor, if we except a few operators employed in overseeing and in specialities, than is required in any other large industry. The skilled workmen are as 13 to 64, women and girls are as 27 to 64, and the boys and girls under fifteen years of age are as 10 to 64.

The reports of operators show about 64,000 wage-workers in textile industries in Pennsylvania.

The wages paid are on the average very low, caused in great part by the employment of females and youths of both sexes. The average working time was, for 1884, about forty-four weeks, but in the table of wages the first or left-hand column of weekly wages represent full time, and the second or right-hand column represents actual time worked. The column showing the wages paid to English wage-workers is, like all consular statistics, presented for what it purports to be. We have no knowledge as to the manner or means employed by consuls in obtaining and compiling their statistics, but if we may be allowed to judge from the full reports of consuls, that the object was to present the true condition of the English operatives, it would be fair to infer that the wage-tables by them prepared were based on actual working time in many if not in all cases, but as there is no certainty of this, we present tables for Pennsylvania based upon full time and actual working time respectively. In the preparation of our comparative table of wages in textile industries, recourse was had to the assistance of persons in Philadelphia, and in Camden, New Jersey, who were versed in the technicalities of names applied to wage-workers. Many of the names by which wage-workers in England are technically known are not in use in this country, but when the nature of the employment was practically the same in England and in Pennsylvania, the English name has been applied to the wage-worker in Pennsylvania, for unless this was done little or no comparions could have been made.

EXHIBIT *of highest average weekly wages paid wage-workers in the textile fabrics industries of England and in Pennsylvania, based on full time and actual working time.*

ENGLAND EMPLOYEES.	Weekly wages.	PENNSYLVANIA EMPLOYEES.	Weekly wages—full time.	Weekly wages—actual time.
Engineers,	$10 22	Engineers,	$13 50	$9 90
Firemen,	5 10	Firemen,	9 00	6 60
Corders,	9 24	Corders,	10 50	7 70
Strippers and grinders,	5 59	Strippers and grinders,	8 10	5 94
Blowers and scutchers,	5 22	Blowers and scutchers,	8 00	5 87
Drawers,	4 32	Drawers,	4 26	3 12
Slubbers,	4 26	Slubbers,	4 26	3 12
Rovers,	3 89	Rovers,	3 96	2 90
Mule overlookers,	10 22	Mule overlookers,	15 00	11 00
Self-actor minders,	8 02	Self-actor minders,	9 20	6 75
Piecers,	2 74	Piecers,	3 00	2 20
Loom jobbers,	9 00	Loom jobbers,	12 00	8 80
Winders and warpers,	4 16	Winders and warpers,	4 26	3 12
Tenters,	3 00	Tenters,	3 50	2 57
Spinners,	2 43	Spinners,	3 50	2 57
Knitters,	4 37	Knitters,	5 20	3 48
Sizers,	10 00	Sizers,	15 00	11 00
Wool sorters,	3 04	Wool sorters,	3 96	2 90
Backwaste winders,	4 62	Backwaste winders,	5 58	4 09
Combers,	3 65	Combers,	4 75	3 48
Preparers,	3 40	Preparers,	4 50	3 30
Finishers,	2 49	Finishers,	3 96	2 90
Doffers' spinning,	2 19	Doffers' spinning,	3 00	2 20
Doffers' twisting,	2 00	Doffers' twisting,	3 00	2 20
Jobbers' spinning,	2 37	Jobbers' spinning,	3 75	2 75
Jobbers' twisting,	2 12	Jobbers' twisting,	3 50	2 57
Weavers,	4 75	Weavers,	7 60	5 57

Factory Laws.

In the matter of proper factory regulations, Pennsylvania is behind England and Massachusetts. England protects the young and defenseless both from the avariciousness of the parents and the despotism of the employer. In Massachusetts, too, the child is amply protected; in fact all employés are better protected by law in England and in Massachusetts than they are in Pennsylvania. Factory legislation is a farce in Pennsylvania, there being no proper person to enforce what little statutory regulations as do exist upon the statute books. Pennsylvania has an institution known as a ward constable. His duty consists in part of reporting, under oath, violations of certain laws to the court of quarter sessions of his county. It is a part of the duty of the constable to report certain violations of factory laws, particularly those laws which relate to the employment of children and the per diem working hours, but the constable has never been known to make report.

The factory laws of Pennsylvania are violated every day and every hour

in the day, but no move has been made to enforce the law. The Society for the Prevention of Cruelty to Children, in Philadelphia, has partly compelled parents and operators to observe the law in respect to children employed in factories, but the law is so loosely construeted that it may be violated with impunity. The following is the substance of the laws regulating factories in England, Massachusetts, and Pennsylvania respectively.

ENGLISH FACTORY REGULATIONS.

Sanitary Provisions.

Every factory to be kept in a cleanly state, free from effluvia, etc., to be well ventilated, not to be overcrowded.

If an inspector observes a nuisance, he must report to sanitary authority.

Inspector authorized to take medieal officer of health, etc., with him into the factory.

Every factory to be lime-washed once in fourteen months, unless painted in oil once in seven years, when it must be washed once every fourteen months.

The Secretary of State may exempt from this provision any class of factory, or part thereof, not requiring it for the purpose of cleanliness.

A child, young person, or woman not to be employed in wet-spinning, unless means are taken to prevent their being wetted and to prevent the escape of steam.

Safety and Accidents.

Hoist or teagle, steam engine, water wheel, and mill gearing to be securely fenced.

Inspector may give notice of maehinery or of a vat or pan containing hot liquid, or metal, considered to be dangerous, or grindstone fixed in a faulty manner. Provisions made for submitting questions to arbitration.

Employment of a child in cleaning machinery in motion prohibited.

Employment between fixed and traversing parts of a self-acting machine forbidden.

Notice of aceidents to be sent to the inspector and certifying surgeon, if fatal. If caused by machinery moved by power, or vat pan, and so as to prevent the injured person returning to his work for forty-eight hours after the accident, the certifying surgeon to report the same to the inspector.

If any person suffer bodily injury from neglect of fence, machinery, etc., required to be fenced, the oceupier is liable to a penalty of £100, which may be applied by the Seeretary of State for the benefit of the injured person.

Employment and Meal Hours.

A child, young person, or woman not to be employed exeept during period of employment stated in notice.

Young Persons and Women.

The period of employment, inclusive of meal hours, shall be either between six, A. M., and six, P. M., or between seven, A. M., and seven, P. M.

On Saturday, when work commences at six, A. M., if not less than one hour be given for meals, manufacturing processes must cease at one, P. M., and all other work at half-past one, P. M. If less than one hour be given for meals, manufacturing processes must cease at half-past twelve, P. M., and all other work at one, P. M.

On Saturday, when work commences at seven, A. M., manufacturing processes must cease at one, P. M., and all other work at 2, P. M.

If the occupier of a factory be of the Jewish religion, and close his factory on Saturday until sunset, he can employ young persons and women until nine, P. M., on Saturday.

All young persons and women must have two hours for meals during the period of employment, of which one hour must be given before three, P. M.

On Saturday at least half an hour must be given.

A young person or woman not to be employed for more than four hours and a half without an interval of half an hour.

Children.

Children are not to be employed either morning or afternoon, or on alternate days.

The period of employment for a child begins and ends the same as for a young person.

Children in the morning set must cease work at the dinner hour, but not later than one, P. M.

Children in the afternoon set begin at the end of the dinner time, but not earlier than one, P. M.

Children may work on Saturdays as young persons.

A child shall not be employed on Saturday in two successive weeks, nor on Saturday in any week, if on any other day in the week he has worked more than five hours and a half.

Children working on alternate days may work as young persons, but must not work on two successive days, nor on the same days in two successive weeks.

When a child is employed as a young person, he must have the same intervals for meals as a young person.

A child not to be employed for more than four hours and a half without an interval of half an hour.

Holidays.

Every child, young person, and woman shall be allowed the following holidays:

The whole of Christmas day and the whole of Good Friday; or instead of Good Friday, the next public holiday under the holidays extension act, 1875.

Notice must be given of such holidays, and be fixed up in the factory.

A half-holiday shall comprise one half of the period of employment on some other day than Saturday.

A child, young person, or woman shall not be employed on any day, or part of a day, set apart for a holiday.

In Scotland, instead of Christmas day and Good Friday, two days shall be set apart for holidays, separated by an interval of three months, one of which shall be the day set apart for the sacramental feast of the parish, or some other day substituted therefor by the occupier.

Eight half-holidays, or equivalent whole holidays, of which half shall be given between 15th March and 1st October following.

In the factory of a Jew, in which all the persons employed are Jews, two bank holidays may be given instead of Christmas day and Good Friday.

In Ireland, the 17th of March must be given, and will reckon as two of the eight half-holidays.

Education of Children.

The parent of a child shall cause such child to attend a recognized efficient school, which may be selected by himself.

A child, when employed in a morning or afternoon set, shall attend school for one school attendance on each day of every week during any part of which he may be employed.

A child, when employed on alternate days, must attend school for two school attendances on each alternate day.

Attendance at school must be between eight, A. M., and six, P. M.

A child is not required to attend school on Saturdays, or on any holiday or half-holiday in pursuance of this act.

Non-attendance caused by sickness, etc.

When there is not a certified school within two miles of the child's residence, the child may attend some other school temporarily approved by an inspector.

A child who has failed to attend school regularly cannot be employed the following week unless the deficient attendance be made up.

The occupier shall obtain certificates from the school-master of the school attendance of the children employed in his factory, and keep such certificates for two months and produce the same to the inspector.

The school managers may apply in writing to an occupier to pay the school fees, not exceeding 3*d.* per week, or one twelfth of the wages of a child, which the occupier may deduct from the wages of the child.

When a child of thirteen has obtained a certificate of proficiency, either of having passed the prescribed standard, or of having attended school the prescribed number of attendances, he is deemed to be a young person.

Certificates of Fitness for Employment.

A person under sixteen shall not be employed for more than seven, or,

if the certifying surgeon resides more than three miles from the factory, thirteen working days, unless the occupier has obtained from the certifying surgeon a certificate in the prescribed form of the fitness of employment of such person.

A certificate of fitness shall not be given unless a certificate of birth be produced, or other proof of real age.

When an inspector considers any person under sixteen unfit to work, he may give notice to the occupiers, and the person shall not be employed more than seven days, unless certified by the certifying surgeon to be fit for work.

An inspector may annul a certificate of a certifiying surgeon if certificate of age of the person named therein was not produced, if he thinks the person under the age named in the certificate.

When a child becomes a young person, a fresh certificate of fitness must be obtained.

A certificate of fitness shall only be granted on personal examination.

The same certificate of fitness may be valid for all the factories in the occupation of the same occupier in the district of the same certifying surgeon.

A certifying surgeon shall examine persons only at the factory where such persons are employed, unless the number of children and young persons is less than five, or unless specially allowed by an inspector.

Certifying surgeons to be appointed by an inspector.

Fees to be paid to the certifying surgeon.

Where there is not a certifying surgeon within three miles, the poor-law medical officer to act as certifying surgeon.

Regulations as to Meal Times.

All children, young persons, and women to have the times allowed for meals at the same periods of the day.

A child, young person, or woman is not allowed to remain in any room where a manufacturing process is being carried on, or to be employed during a meal time.

Notice of meal hours to be fixed up, of hours of work, etc.

Prohibitions of Employment.

A child shall not be employed under the age of ten years.

A child, young person, or woman shall not be employed on Sunday; but

If the occupier be of the Jewish religion, and close his factory on Saturday, both before and after sunset, a Jewish young person or woman may be employed on Sunday the same as if Sunday were Saturday.

Over-Time and Night-Work.

Male young persons of sixteen years of age may be employed in lace factories between four, A. M., and ten, P. M., under certain conditions.

If the occupier be of the Jewish religion, and keep his factory closed on

Saturday, both before and after sunset, he may employ the young persons and women one hour on every other week day, but not before six, A. M., or after nine, P. M.

The Secretary of State may authorize employment of young persons and women to recover lost time in water-mills at the rate of one hour per day, for not exceeding ninety-six days in case of drought, and not exceeding forty-eight days in case of flood.

The Secretary of State, where cleanliness, etc., is deficient, may, by order, direct the adoption of special means as a condition of the exceptional employment.

Where an exception has been authorized, and it is found to be injurious to health, the Secretary may, by order, rescind such exception.

Miscellaneous Regulations.

Notice to be hung up of times of work and meals. Abstract of act. Names of inspectors and certifying surgeons. Clock by which hours are regulated.

Notice of special exception to be hung up, and notice to be sent to inspector.

When working under special exception, same to be entered in a register.

Register of young persons under sixteen years of age to be kept, with details, as prescribed by the Secretary of State. Extracts to be sent, when required, to the inspector.

Hours of work to be regulated by a public clock.

Any person in a factory, while machinery is in motion, deemed to be employed, unless the contrary be proved.

Occupier of factory to send notice to inspector within one month of commencing to work a factory.

Inspectors of weights and measures authorized to examine weights and measures used for checking wages, etc.

Massachusetts Factory Regulations.

No child under ten years of age shall be employed in any manufactory, mechanical, or mercantile establishment in the Commonwealth. No child under fourteen years of age shall be so employed, except during the vacations of the public schools, unless during the year preceding such employment he has, for at least twenty weeks, attended some public or private day school; nor shall such employment continue unless such child, in each and every year, attend school as aforesaid; and no child shall be so employed who does not present a certificate, made by or under the direction of the school committee, of his attendance at school as provided.

Employers shall require and keep on file a certificate of the age and place of birth of every child under sixteen years of age employed, and the amount of his school attendance during the year next preceding such employment.

The penalty for employment of children contrary to these provisions is not less than twenty dollars, nor more than fifty dollars. Truant officers are

obliged to visit establishments and inquire into the situation of the children employed, and may demand the names of children and the certificates of age and school attendance. Children under fourteen years of age who cannot read and write are not to be employed while public schools are in session; parents or guardians permitting such employment are subject to a fine of not less than twenty dollars, nor more than fifty dollars.

Employers requiring from employés, under penalty of forfeiture of wages earned, a notice of intention to leave, shall be liable to like forfeiture if employé be discharged without similar notice.

Whoever, by intimidation, or force prevents, or seeks to prevent, a person from entering into or continuing in the employment of a person or corporation, shall be punished by a fine of not more than one hundred dollars.

Employers are not to contract with employés for exemption from liability for injuries resulting from employés' own negligence.

No minor under eighteen years of age, and no woman, shall be employed in laboring in any manufacturing establishment more than ten hours in any one day, except when it is necessary to make repairs to prevent the interruption of the ordinary running of the machinery, or when a different apportionment of the hours of labor is made for the sole purpose of making a shorter day's work for one day of the week, and in no case shall the hours of labor exceed sixty in a week. The penalty for a violation of this provision is not less than fifty dollars nor more than one hundred dollars.

The belting, shafting, gearing, and drums of all factories, when so placed as to be dangerous to persons employed therein, while engaged in their ordinary duties, shall be, as far as practicable, securely guarded. No machinery other than steam-engines in a factory shall be cleaned while running, if objected to in writing by an inspector. All factories shall be well ventilated and kept clean. The openings of all hoistways, hatchways, elevators, and well-holes upon every floor of a factory or mercantile or public building shall be protected by good and sufficient trap-doors or self-closing hatches and safety-catches. All elevator cabs or cars shall be provided with some suitable device for securely holding the cabs in case of accident to the hoisting machinery.

All manufacturing establishments, three or more stories in height, in which forty or more persons are employed, unless supplied with a sufficient number of tower stairways, shall be provided with sufficient fire-escapes, properly constructed upon the outside thereof, and connected with the interior by doors or windows, with suitable landings at every story above the first, including the attic, if the same is occupied for work-rooms. Such fire-escapes shall be kept in good repair and free from obstruction.

Every room above the second-story in factories or workshops in which five or more operatives are employed shall be provided with more than one way of egress by stairways on the inside or outside of the building, and such stairways shall be, as nearly as may be practicable, at opposite ends of the room. Stairways on the outside of the buildings shall have suit-

able railed landings at each story above the first, and shall connect with each story of the building by doors or windows opening outwardly, and such doors, windows, and landings shall be kept at all times clear of obstruction. All main doors, both inside and outside, must open outwardly, and each story must be amply supplied with means for extinguishing fires.

Every building three or more stories in height, in whole or in part used for a tenement, for more than four families or a lodging-house, shall be provided with sufficient means of escape in case of fire. No explosive or inflammable compound shall be used in any factory in such place or manner as to obstruct or render hazardous the egress of operatives in case of fire.

Persons violating these provisions as to buildings are liable to a fine of not less than fifty dollars nor more than one hundred dollars. Females employed in manufacturing establishments must be provided with seats and be permitted to use them when not engaged in the duties for which they are employed. This also applies to stores.

For the enforcement of all these provisions the Governor appoints two or more members of the district police (a State force) to act as inspectors of factories and public buildings. They may enter all buildings used for public or manufacturing purposes, examine methods of protection from accident, means of escape from fire, and make investigations as the employment of women and children. Fire-escapes, etc., are to be constructed under the approval of one of the inspectors.

Pennsylvania Factory Regulations.

Eight hours constitute a legal day's work, in absence of special contract, except for farm labor and labor by the year, month, or week. Ten hours constitute a legal day's work in cotton, woolen, silk, paper, bagging, and flax factories. No minor under thirteen shall be employed in any such factory under penalty of fifty dollars. No child between thirteen and sixteen years of age shall be employed more than nine months in any one year who shall not have attended school at least three consecutive months in the same year. No minor shall by any contract be employed in any of said factories for more than sixty hours per week, or an average of ten hours per day. Penalty for violation of this provision not to exceed fifty dollars. Factories in which employés are at work in third or higher story must have permanent external fire-eseapes, satisfactory to fire commissioners and fire marshal of district.

STEAM RAILWAY LABOR.

The railroads of Pennsylvania employ about 70,000 wage-workers, the working time of which is computed by the month. In no other industry in the State is the average wage-worker assured as regular and as full working time as that given to employés in the service of railroad companies, and as the necessities of the business require the employment of nearly every class of mechanics, a table of wages paid to wage-workers in

the employ of railroad companies will show, if the value of full working time be taken into consideration, the highest average wages paid to trainmen, mechanics, and laborers. The consular reports from England, which are here presented, give the weekly wages of wage-workers on English railroads.

Some of the names are new and strange, but in general, the names applied to wage-workers there and those applied to wage-workers here can be easily harmonized. We present the tables of consuls in full, together with a table giving the monthly wages paid in Pennsylvania from 1875 to 1884, inclusive.

Railway Employees in England.

Wages paid weekly to railway employés (those engaged about stations, as well as those engaged on the engines and cars, linemen, railroad laborers, &c.,) in England:

Description of Employment.	Average wages.
Liverpool and London.	
Station-masters,	$9 20
Inspectors,	6 50
Porters,	4 00
Engine-drivers,	8 60
Firemen,	5 25
Cleaners,	3 00
Railroad laborers,	4 45
Leeds.	
Guards,	5 94
Porters,	4 20
Signalmen,	6 24
Lampmen,	4 16
Engine-drivers,	8 75
Firemen,	5 75
Cleaners,	3 00
Fitters,	6 00
Laborers,	3 50
Newcastle-on-Tyne.	
(Passenger department.)	
Station-masters,	12 00
Station-masters' assistants,	8 24
Newcastle-on-Tyne—Continued.	
Booking and passenger clerks,	$8 38
Telegraph clerks,	5 68
Guards,	6 84
Guards' assistants,	5 00
Foremen porters,	5 48
Parcel porters,	4 75
Excess porters,	5 72
Porters,	4 36
Lampmen,	4 60
Carriage cleaners,	4 36
Ticket collectors,	6 24
Signalmen,	6 00
Gatemen,	4 12
(Goods department.)	
Inspectors,	8 16
Guards,	4 06
Foremen,	4 04
Porters,	5 20
Timber loaders,	5 60
Shunters,	5 72
Rollymen,	5 62
Horsemen,	5 48
Number-takers,	4 12

Wages paid per week to railroad employés in locomotive department, northern division North-Eastern Railway Company, Newcastle-on-Tyne.

(Per week of fifty-four hours for men in repairing departments.)

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Locomotive works.		*Locomotive works*—Continued.	
Foremen,	$11 00	Lighters-up,	$5 27
Chargemen (erectors,)	8 66	Stationary-engine drivers,	5 45
Fitters,	7 33	Coke and coal fillers,	4 76
Boilersmiths,	8 30	Wagon greasers,*	4 39
Boilersmiths' assistants,	6 03		
Tin and coppersmiths,	8 00	*Engineering department.*	
Blacksmiths,	7 13	Inspectors,	8 48
Strikers,	4 51	Gaugers,	6 48
Turners and machine-men,	6 39	Navvies, (pickmen,)	5 48
Brass molders,	7 13	Navvies, (shovelers,)	5 48
Brass finishers,	8 12	Plate-layers,	5 60
Carriage-builders,	6 36	Plate-layers, extra gang,	5 48
Wagon-builders,	6 36	Joiners,	7 54
Carriage painters,	4 51	Joiners' laborers,	5 36
Engine painters,	6 12	Brick-layers,	7 04
Pattern-makers,	7 39	Plumbers and gas-fitters,	7 54
Sawyers,	5 27	Signal-fitters,	7 04
Laborers,	4 69	Gas-makers,	5 48
Engine-drivers,	9 45	Painters,	6 36
Firemen,	5 69	Smiths,	7 42
Mineral guards,	6 36	Strikers,	5 24
Engine cleaners,	3 03	Masons,	5 67
Boiler cleaners,	4 70	Masons' laborers,	2 48

* These rates are irrespective of piece-work profits, overtime, &c. Boys and apprentices have been disregarded in this return, except in the case of engine-cleaners.

Average Monthly Wages of Employees in Steam Railway Service

Pennsylvania.

Average number of employés for the year 1884.	Occupations.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
	Railroads—Conducting Transportation.										
2,319	Clerks,	$54 39	$53 71	$53 41	$47 81	$54 65	$52 20	$49 07	$50 50	$59 85	$45 00
35	Chief telegraph operators,	134 32	91 29	101 90	103 33	65 79	69 59	94 67	108 50	94 52	85 76
886	Telegraph operators,	40 70	44 97	45 11	36 39	36 18	39 60	38 85	41 02	40 40	40 92
1,828	Passenger and freight agents,	54 70	47 21	50 78	46 82	43 32	41 54	45 33	43 47	50 52	47 51
55	Depot-masters,	61 47	61 68	72 77	45 33	69 39	71 42	73 50	83 21	67 14	66 57
530	General dispatchers and train-masters,	96 20	89 62	83 36	.	79 36	90 98	104 90	103 58	87 67	91 48
530	Train-dispatchers,	92 39	87 31	78 39	66 06	72 63	80 00	71 83	80 18	80 00	91 48
596	Conductors, passenger,	81 26	78 02	72 81	78 70	68 52	70 58	73 48	78 89	72 66	68 00
1,908	Conductors, freight,	65 33	59 41	64 08	55 64	54 85	62 70	63 64	65 87	72 44	63 00
847	Brakemen, passenger,	48 77	45 33	44 46	41 51	37 85	42 00	46 87	46 63	44 32	42 40
6,680	Brakemen, freight,	48 77	45 33	44 31	41 51	37 85	42 00	43 19	46 21	42 89	42 68
263	Janitors,	. . .	. . .	. .	. .	32 00	31 26	32 54	31 29	30 75	25 95
810	Watchmen,	39 07	39 14	39 13	37 85	35 00	32 95	35 39	39 05	37 51	36 54
520	Baggage-masters,	49 54	44 84	45 53	41 38	43 90	48 75	47 23	49 77	49 98	44 35
545	Switch-tenders,	35 75	39 23	39 25	47 08	35 78	42 27	39 48	40 22	44 64	41 57
158	Baggage-porters,	. . . .	31 98	. . . .	. . .	33 00	35 33	36 80	36 55	31 94	34 29
53	Policemen,	. . . .	. . .	. . . .	45 00	43 33	50 80	46 46	48 22	47 07	46 15
596	Gate and flagmen,	29 38	33 66	.	.	39 00	40 16	46 44	45 73	42 60	36 58
35	Cleaners,	. . . .	. . . .	33 15	22 50	28 45	29 05	23 71	19 41	26 27	20 65
326	Messengers,	. . . .	. . . .	. .	. . .	18 83	21 05	17 11	19 11	24 63	17 86
80	Weigh-masters,	43 42	47 93	50 00	50 00	42 00	47 15	54 47	56 92	47 58	50 81
4,976	Laborers,	. . . .	. . . .	. . . .	. . . .	32 44	32 44	34 52	33 29	35 90	33 82
12	Blacksmiths,	. . . .	. . . .	. . . .	. . . .	47 00	47 00	53 45	68 30	51 40	43 62
8	Blacksmiths' helpers,	. . . .	. . . .	. . . .	. .	38 00	38 00	38 70	39 20	42 60	31 67
1,417	Warehousemen,	. . . .	. . . .	. . . .	. . . .	31 80	35 70	36 16	34 58	34 67	34 39

8	Cargo-inspector,	. . .	. . .	. . .	. . .	44 00	50 00	46 74	44 00	45 00	43 25
1,300	All others,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	42 60
	Maintenance of Way.										
153	Supervisors,		77 50	90 00	. .	75 00	75 95	81 18	90 18	58 21	77 65
1,371	Track-foremen,	50 27	49 95	46 50	41 33	43 00	43 18	47 01	48 13	44 06	43 56
11,268	Trackmen,	34 23	32 46	29 68	26 68	26 00	29 83	31 21	32 95	30 35	29 65
53	Switchmen,	. . .	. . .	. . .	. . .	34 00	39 16	38 46	35 89	37 58	34 58
51	Conductors, work trains,	. .	. . .	. . .	. . .	65 00	69 00	67 68	67 21	66 68	65 25
56	Flagmen, work trains,	. . .	. . .	. . .	. . .	31 40	33 61	38 29	39 97	43 09	44 34
73	Brakemen, work trains,	. . .	. . .	. . .	. . .	33 62	36 84	41 29	48 83	38 92	41 30
64	Pumpers,	. . .	. . .	. . .	. . .	35 50	38 64	40 93	41 90	37 60	39 44
40	Master carpenters,	. . .	. . .	. . .	. . .	90 00	81 69	90 89	99 28	93 30	88 76
105	Foremen, carpenters,	. . .	67 92	.	. . .	65 00	64 90	67 45	72 43	66 06	72 10
1,178	Carpenters,	50 18	52 59	51 32	44 13	52 00	46 05	48 94	53 20	53 02	51 55
50	Foremen, laborers,	. . .	. . .	.	. . .	39 00	51 66	44 82	50 22	52 60	49 10
3,868	Laborers,	35 56	35 84	32 23	30 87	31 20	29 90	29 83	32 52	31 92	31 91
33	Foremen, masons,	. . .	80 08	.	. . .	70 20	73 18	70 87	74 82	77 67	74 45
287	Masons,	54 96	63 45	56 81	45 50	55 90	56 69	56 35	61 00	62 58	60 52
15	Foremen, quarrymen,	. . .	60 30	. . .	. . .	. .	56 25	43 58	65 06	51 41	54 05
266	Quarrymen,	. . .	. . .	. . .	. . .	31 20	32 21	34 11	37 21	18 40	30 39
66	Blacksmiths,	. . .	. . .	. . .	. . .	65 00	60 70	53 37	51 18	50 97	54 43
44	Blacksmiths' helpers,	. . .	. . .	. . .	. . .	37 44	38 64	34 79	37 05	39 81	33 89
70	Painters,	. . .	. . .	. . .	. . .	46 80	45 93	52 60	49 54	54 16	50 33
100	Telegraph repairmen,	65 00	55 36	61 54	50 47	. . .	44 33	47 84	42 08	46 59	49 28
767	All others,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	37 43	27 44
	Motive Power.										
48	Master mechanics,	146 27	137 82	120 15	92 83	114 46	123 83	117 11	154 24	133 64	120 39
32	General foremen,	99 75	86 91	91 12	63 44	80 91	103 00	95 43	122 74	96 71	111 96
380	Foremen,	. . .	.	.	. . .	75 05	73 43	76 36	80 50	77 91	78 19
25	Road foremen of engines,	64 29	61 83	77 66	64 02	80 52	112 62	106 16	105 97	100 51	104 54
239	Motive power clerks,	54 39	. . .	57 76	47 81	54 58	74 31	71 22	76 70	54 97	46 31
350	Engine preparers,	. . .	. . .	72 00	. . .	45 76	47 10	47 20	45 32	49 33	44 94
41	Assistant engine preparers,	. . .	. . .	. . .	. . .	36 76	40 86	33 60	30 33	34 78	34 26
1,123	Car-inspectors,	. . .	47 97	. . .	. . .	38 10	41 52	42 09	44 69	43 78	44 49
466	Car-cleaners,	. . .	31 92	. . .	. . .	27 00	27 63	29 90	29 74	29 25	30 13
9	Riggers,	50 70	42 25	. . .	. . .	51 30	50 73	51 01	50 77	50 66	58 67
282	Watchmen,	. . .	.	.	. . .	34 50	37 42	39 83	41 14	41 14	38 80
1,872	Machinists,	55 24	56 86	51 41	47 88	54 13	54 44	55 35	56 78	57 58	57 36
597	Machinists' helpers,	. . .	. . .	42 20	. . .	36 30	38 81	32 82	36 75	35 72	35 18
328	Machinists' apprentices,	. .	23 53	33 80	. . .	22 88	20 30	21 65	23 05	24 69	15 10
744	Blacksmiths,	53 83	57 11	52 18	50 20	53 70	56 98	54 92	55 54	58 55	54 76

Average Monthly Wages of Employees in Steam Railway Service—*Continued.*

Pennsylvania.

Average number of employés for the year 1884.	Occupations.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
	Motive Power—Continued.										
876	Blacksmiths' helpers,	$40 80	$41 27	$34 94	$27 00	$33 02	$36 73	$35 76	$35 69	$36 43	$35 17
38	Blacksmiths' apprentices,	. . . .	17 94	. . . .	. . . .	15 00	14 34	26 61	26 64	25 18	21 56
	Boiler-makers,										
	Boiler-makers' helpers,										
172	Tinners,	48 19	59 63	54 63	44 60	50 40	55 00	52 85	55 13	56 99	53 70
52	Tinners' helpers,	. . . .	. . . .	39 00	. . . .	28 60	31 67	33 94	32 98	28 18	41 71
17	Tinners' apprentices,	. . . .	. . . .	. . . .	. . . .	26 00	16 81	27 65	23 81	25 74	40 78
35	Coppersmiths,	53 76	67 06	62 92	56 81	53 10	61 55	58 67	61 44	56 50	61 79
1,826	Carpenters,	. . . .	. . . .	. . . .	. . . .	46 80	49 62	47 59	48 25	48 52	48 10
42	Carpenters' apprentices,	. . . .	18 72	. . . .	. . . .	25 48	21 50	24 38	23 91	28 45	23 80
623	Laborers, carpenter shop,	. . . .	39 00	. . . .	. . . .	28 60	33 20	31 69	31 36	33 10	32 62
44	Trimmers,	. . . .	. . . .	. . . .	. . . .	52 00	54 12	52 50	56 51	47 92	48 53
493	Painters,	53 04	55 66	51 93	47 46	43 94	47 20	50 14	52 06	51 57	53 37
16	Painters' apprentices,	. . . .	18 98	. . . .	. . . .	18 20	20 50	22 98	23 43	26 62	27 65
77	Laborers, paint-shop,	. . . .	. . . .		. . . .	28 60	34 10	32 31	31 52	31 91	34 11
55	Oil distributors,	. . . .	. . . .	50 00	. . . .	34 20	36 57	38 89	38 97	36 82	42 98
339	Coal men,	. . . .	. . . .	. . . .	. . . .	32 70	34 03	33 53	35 93	36 33	35 76
	Grinders,	. . . .	. . . .	. . . .	. . . .	33 80	37 20	50 42	53 77	48 50	
1,647	Laborers,	. . . .	. . . .	. . . .	. . . .	28 60	32 05	31 29	31 79	32 62	32 51
696	Engine cleaners,	33 02	37 24	35 11	29 73	33 00	32 50	34 00	30 07	34 03	33 36
195	Stationary engineers,	64 74	51 95	48 00	49 14	37 80	49 70	44 72	50 33	48 49	44 74
57	Stationary firemen,	. . . .	46 28	44 20	. . . .	37 80	38 19	41 08	45 46	39 51	38 60
725	Passenger enginemen,	83 63	80 23	82 37	83 77	88 21	85 43	89 93	93 77	88 91	85 57
719	Passenger firemen,	49 93	46 38	50 19	40 87	43 80	49 36	50 12	49 91	50 47	48 85
1,882	Freight enginemen,	83 63	80 23	73 41	67 00	70 00	72 80	78 55	84 27	77 89	65 99

1,992	Freight firemen,	49 93	46 38	50 37	....	42 00	44 33	47 82	47 17	46 43	44 69
192	Distributing enginemen,	...	....	....	....	70 00	71 66	72 07	70 76	79 66	47 42
189	Distributing firemen,	....	....	....	....	40 00	41 63	44 03	41 96	46 21	42 47
415	Yard enginemen,	....	....	97 20	....	72 00	74 20	72 94	74 15	60 57	68 88
425	Yard firemen,	....	....	97 20	....	42 80	44 89	45 51	40 62	43 08	45 50
1,094	All others,	....	....	....	....	....	....	....	....	43 16	45 07
68,138	General total of employés.										

Glass

The tables of wages paid wage-workers in glass-factories in Pennsylvania are compiled from reports of operators employing about nine thousand persons, and representing about one hundred furnaces. The plate-glass factories of Pennsylvania average about forty-three weeks of full working time, and the bottle, chimney, and pressed-ware factories about forty-four weeks.

The average daily wages of skilled mechanics in glass manufactories is apparently above the average of wages paid to skilled wage-workers in other industries, but owing to loss of time in consequence of summer heat and disagreements happening almost every year between the employer and the employed, this high average is greatly reduced. The table of wages annexed shows the average daily wages from 1879 to 1884, inclusive. This table is based on full time. For 1884, two exhibits have been made, —one showing the daily wages paid based on full time, the other, the weekly wages based on actual time employed.

As the reports of consuls do not make distinction between wage-workers in plate glass and in flint and in green glass, and as there is no uniformity in names applied to particular wage-workers in special branches of the trade, we have furnished such tables of wages paid wage-workers in England and other countries as may possibly be of service in determining differences in wages paid here and abroad.

EXHIBIT *of weekly wages paid wage workers in the glass manufactories of France.*

(Wages paid per week of seventy-two hours to glass-workers in Marseilles.)

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Bottle manufacture.		Carrier,	$1 25
One gang of workmen:		Water carriers, (two,)	0 35
Blower,	$12 00	Fixers, (two,)	1 25
Helper, first-class,	7 53	Foremen, (1 to 6 or 8 gangs,)	7 53
Helper, second class, (boy,)	2 90	Smelter, (1 to 6 or 8 gangs,)	7 53

While the above are given as the average wages earned, the "gang" is really paid by the piece, as follows: Per hundred bottles, blower, twenty-eight cents; first helper, sixteen cents; second helper, seven cents; carrier, three cents; water-carriers, nine mills; fixers, three cents; foremen and smelters, two cents.

In the manufacture of glassware, the wage returns are given as follows: Men, $9 65; boys, $5 61 per week.

Wages paid per week of sixty hours to glass-workers in Rheims and department of Gironde.

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Rheims.		*Department of Gironde.*	
Blowers,	$12 79	Blowers, (colored bottles,)	$12 12
Blowers' assistants,	7 96	Blowers, (white bottles and jars,)	7 49
Stokers,	5 76	Clerks,	4 63
Stokers' assistants,	5 30	Decorators,	5 79
Ordinary workmen,	5 79	Firemen,	5 11
Packers,	3 84	Laborers,	3 96
Blacksmiths,	5 76	Melters,	5 11
Blacksmiths' assistants,	4 08	Packers,	3 96
Common laborers,	3 48	Sorters,	3 96
		Testers,	3 96

EXHIBIT *of weekly wages paid glass-workers in Belgium.*

(Wages paid per week of seventy-two hours to glass-workers in Val St. Lambert, near Liege.)

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Laborers,	$4 80	Warehouse packers,	$5 00
Artists,	13 00	Sandmen,	6 00
Mechanics' laborers,	5 00	Plaster turners,	7 50
Mechanics,	8 00	Smoothers and overseers,	9 75
Glass-grinders,	10 92	Polishers,	7 50
Women, (experienced,)	3 60	Blowers,	15 00
Polishers, (boys,)	3 20	Blowers' assistants,	9 00
Casting-hall mixers,	6 00	Stokers,	5 50
Furnace and table men,	9 36	Flatteners,	5 50
Furnace pot-makers,	7 68	Cutters,	5 40
Women, (girls,)	3 00		

Wages paid per month of two hundred and sixty hours to glass-workers in the Consular district of Brussels.

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Firemen,	$21 23	Third teasers,*	$32 81
Book-keepers,	48 25	Flatteners,	33 77
Clerks,	14 47	Cutters,	24 12
Blowers,	96 50	Packers,	17 37
Gatherers,	33 77	Blacksmiths,	19 30
First teasers,*	46 32	Laborers, (per day,)	60
Second teasers,*	38 60		

*Three for every furnace.

EXHIBIT *of average daily wages paid wage-workers in the glass factories of Pennsylvania, from 1879 to 1884, inclusive, based on full working time:*

OCCUPATIONS.	1879.	1880.	1881.	1882.	1883 and 1884.	WEEKLY WAGES, ACTUAL TIME. 1884.
Window glass.						
Foremen,	$4 00	$3 83	$2 91	$2 91	$4 36	$18 44
Blowers of double-strength glass,		7 15	6 41	6 41	9 75	39 00
Blowers of single-strength glass,	4 94	4 74	4 31	4 31	6 00	24 00
Gatherers of double-strength glass,		3 49	3 52	4 52	5 22	20 88
Gatherers of single-strength glass,	2 65	2 77	2 86	2 86	3 75	15 00
Flatteners,	5 00	5 05	4 38	4 38	6 22	24 88
Cutters,	5 00	5 22	4 09	4 09	4 75	19 00
Assorters of glass,		4 16	4 75	4 75	4 62	18 48
Layers-in—flattening department,		2 12	2 20	2 20	2 31	10 24
Layers-out—flattening department,		1 89	2 23	2 23	2 31	10 24
Leer-tenders—flattening department,		1 65	1 59	1 59	1 91	7 64
Batch-mixers,	1 79	1 71	1 88	1 88	2 38	9 52
Lime-sifters,		1 66	1 72	1 72	2 24	8 96
Sand-sifters,		1 75	1 50	1 50	1 85	7 40
Master teazers,	3 00	3 22	3 78	3 78	4 16	16 64
Master teazers' helpers,	1 74	1 90	1 95	1 95	2 12	8 48
Teazers,	1 74	1 90	1 76	1 76	2 12	8 48
Coal-wheelers,		1 81	1 74	1 74	2 00	8 00
Pot-makers,	2 94	3 11	2 79	2 79	3 11	12 44
Pot-makers' assistants,	1 41	1 50	1 55	1 55	1 65	6 60
Glass-packers,	1 91	2 20	2 37	2 37	3 20	12 80
Glass-packers' assistants,		1 96	2 00	2 00	1 87	7 48
Laborers,	1 38	1 34	1 30	1 30	1 42	5 68
Teamsters,		1 83	1 92	1 92	2 00	8 00
Other employés,	1 59	1 69	1 46	1 46	1 57	6 28
Flint and green glass.						
Pressers, first class,	3 66	4 08	4 36	4 36	4 00	16 00
Pressers, second class,		3 55	3 53	3 53	3 50	14 00
Pressers, third class,		3 02	2 85	2 85	2 72	10 88
Handlers,		4 61	4 07	4 07	4 06	16 24
Finishers,	3 60	3 50	3 35	3 35	3 03	12 12
Foot-finishers,		2 72	3 62	3 62	2 21	8 76
Mold, chimney, and other blowers,	4 02	3 82	4 08	4 08	3 44	13 60
Gatherers,	2 00	1 93	2 02	2 02	1 64	6 56
Snapping and carrying boys,	84	75	79	79	82	3 28
Mold-makers,	2 43	3 19	3 28	3 28	3 33	13 32
Mold-cleaners, greasers, and holders,		1 00	1 12	1 12	92	3 68
Mixers,	1 95	2 01	2 15	2 15	1 81	7 24
Teazers,	2 20	2 01	2 25	2 25	2 34	9 36
Leer-tenders,		1 52	1 42	1 42	1 74	6 96
Cutters,	2 17	1 87	2 58	2 58	2 48	9 92
Grinders,		1 37	1 29	1 29	1 45	5 80
Roughers,		1 58	1 33	1 33	1 60	6 40
Shearers,		2 25	2 46	2 46	2 80	11 20
Stopper-makers,		4 00	5 00	5 00	4 00	16 00
Stopper-grinders,		2 00	2 50	2 50	2 00	8 00
Selecters,		1 75	2 25	2 25	1 81	7 24
Engravers,	2 27	2 33	2 70	2 70	2 73	10 92
Mold papering, packing, and other boys,		65	64	64	70	2 80
Packers,	2 06	1 70	1 94	1 94	2 00	8 00
Engineers,		2 25	2 28	2 28	2 26	9 04
Laborers,	1 53	1 35	1 37	1 37	1 50	6 00
Other employés,	2 03	2 06	1 98	1 98	2 00	8 00

EXHIBIT *of weekly wages paid plate-glass workers in England.*

OCCUPATIONS.	Weekly wages.	OCCUPATIONS.	Weekly wages.
Pot-makers,	$8 24	Smoothers,	$7 00
Furnacemen,	8 48	Polishers,	7 24
Casters,	9 00	Cutters,	6 08
Grinders,	7 00	Packers,	6 08

EXHIBIT *of weekly wages paid to glass-workers in Prussia.*

(Average wages paid per week of sixty-five hours to glass-workers in Oberkirchen, near Berlin.)

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Blowers,	$5 41	Carriers,	$1 43
Shearers,	6 00	Laborers,	2 14
Mixers,	3 57	Basket-makers,	2 14

Average annual wages paid glass-workers in Silesia.

(Hours of labor sixty-six to seventy-two per week.)

DESCRIPTION OF EMPLOYMENT.	Annual wages.	DESCRIPTION OF EMPLOYMENT.	Annual wages.
Plate-glass makers,	$357 00	Pattern-makers,	$155 00
Hollow-glass makers,	286 00	Pot-makers,	219 00
Bottle-makers,	286 00	Pot-tenders,	108 00
Glass-grinders,	357 00	Clay-workers and packers,	96 00
Melters,	275 00	Other assistants,	86 00
Glassmakers' assistants,	167 00	Women and girls,	48 00
Apprentices,	52 00		

Average wages per week of sixty hours paid to glass-workers in Stuttgart district.

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
In Zuffenhausen.		*In Buhleback.*	
Glassmakers,	$5 36	Glassmakers,	$7 14
Cutters,	4 05	Laborers,	2 86
Laborers,	2 98		

Average wages per week of sixty hours to glass and porcelain-workers in Lanscha, Steinach, Hüttenbach, and vicinity.

DESCRIPTION OF EMPLOYMENT.	Average wages.	DESCRIPTION OF EMPLOYMENT.	Average wages.
Glass-workers.		*Porcelain-workers.*	
Grinders, (males,)	$3 90	Modelers,	$8 00
Grinders, (females,)	1 80	Decorators,	6 00
Tubes for thermometers,	4 20	Formers and turners, (males,)	4 55
Marbles, per 1,000, (plain,)	2 39	Formers and turners, (females,)	2 50
Marbles, per 1,000, (figured,)	4 60	Firemen,	4 00
Bead-makers,	2 50	Packers,	3 25
Toy-makers,	3 40	Laborers,	2 90
Eye-makers, for dolls and animals,	3 00		
Eye-makers, for human beings,	7 96		

EXHIBIT *of average weekly wages paid in the general trades in England and in Pennsylvania, respectively, based upon full working time.*

OCCUPATIONS.	England.	Pennsylvania.	OCCUPATIONS.	England.	Pennsylvania.
Bricklayers,	$7 56	$15 00	Brickmakers,	$7 00	$7 50
Hod-carriers,	4 94	8 00	Brewers,	6 85	12 00
Masons,	7 68	15 00	Butchers,	5 50	9 00
Tenders,	5 07	7 50	Brassfounders,	7 47	12 00
Plasterers,	7 80	15 00	Cabinetmakers,	7 68	15 00
Tenders,	5 27	9 00	Confectioners,	6 84	10 00
Slaters,	7 10	12 00	Cigarmakers,	6 07	12 00
Roofers,	7 35	12 00	Coopers,	7 50	11 50
Tenders,	4 24	6 00	Distillers,	7 00	12 00
Plumbers,	7 90	15 00	Teamsters,	5 37	9 00
Tenders,	4 69	6 00	Street railways,	6 09	10 50
Carpenters,	7 66	12 00	Hatters,	6 10	15 00
Gas-fitters,	7 66	12 00	Laborers and porters,	4 70	7 00
Bakers,	6 17	10 00	Potters,	5 20	12 00
Blacksmiths,	7 37	9 50	Printers,	7 17	12 00
Strikers,	5 30	7 00	Harnessmakers,	6 63	12 50
Bookbinders,	6 77	12 00	Tanners,	6 38	9 00

TABLE 3.

Being an exhibit of the average weekly wages of all wage-workers in the several industries of Pennsylvania named, supposing the annual amount of wages paid in each industry was divided equally among all the wage-workers in the special industry from which the annual wage-fund is obtained.

INDUSTRIES.	Weekly wages.	INDUSTRIES.	Weekly wages.
Agricultural implements,	$8 00	Iron foundries,	$11 40
Axes and saws,	8 80	Lasts,	7 75
Bessemer steel,	12 17	Milling-flour and grist,	5 04
Blast furnaces,	8 50	Malt,	8 80
Bloomaries,	8 12	Neckwear,	7 25
Brass founderies,	9 80	Ores, iron,	4 80
Boilers and engines,	8 56	Oil cloths,	5 17
Bridges,	9 00	Oil refineries,	7 00
Boots and shoes,	8 00	Paper,	7 15
Breweries,	12 00	Paints,	9 33
Bricks, common,	3 00	Planing-mills,	8 00
Bricks, fire,	6 00	Potteries,	7 66
Brushes,	3 20	Rolling-mills,	8 00
Carpets,	6 71	Saw-mills,	5 29
Cigars,	7 08	Slate quarries,	6 10
Cotten cloth,	5 10	Sugar refineries,	9 25
Crucible steel,	11 00	Soap and candles,	8 20
Crucibles,	16 60	Show cases,	9 50
Cordage,	5 80	Silk,	4 00
Coal, anthracite,	6 91	Shirts,	5 00
Coal, bituminous,	7 20	Stoves and ranges,	11 00
Distilleries,	8 20	Tanneries,	7 50
Furniture,	8 75	Trunks,	8 00
Glass, window,	11 50	Toys,	3 64
Glass, flint and green,	8 00	Terra-cotta,	9 80
Glass sand,	5 80	Type founderies,	5 43
General machinery,	9 25	Umbrellas and parasols,	6 04
Hats and caps,	4 00	Upholstery goods,	6 16
Harnesses,	8 00	Woolen goods,	5 40

The general average of the above would be (if we take into consideration the proportion of employés to the industries named in the table) about seven dollars and a half per week. This sum will not permit of any extravagant habits, and any diminution of it must inevitably compel the average wage-worker to abstain from the purchase of those necessaries of life which at the time seems most convenient to dispense with. To lessen the wages of a body of wage-workers is in effect to cause an "over-production," so-called, of manufactured products, since the average wage-worker, in order to meet the requirements of nature and those wants incident to his station in life, must, in the event of a reduction of wages, either go in debt and satisfy those wants, or economize, and consequently leave the manufactured or other product in the hands of the dealer—hence an "over-production," which is but the result of an enforced under consumption.

RELATIVE COST OF LIVING.

The question of wages carries with it necessarily the relative cost of living in England and in Pennsylvania.

No two writers agree on the cost of living in England, and this is not to be wondered at when we consider that prices vary according to the season, and are seldom alike in two different localities.

The same may be said of prices in Pennsylvania; but the reports of prices given for this State are compiled from returns made from nearly every county in the State, so that they are as nearly accurate as it was possible to obtain them.

All accounts agree in stating that the wage-worker in England does not live as well as his fellow wage-worker in Pennsylvania, and that the wages paid in Pennsylvania will purchase more of the necessaries of life—dollar for dollar—than they will in England. This is not true in all cases. In 1883, the United States exported one hundred and thirty million dollars' worth of breadstuffs to the United Kingdom, and yet we have it on the testimony of Secretary Frelinghuysen that "bread made out of American flour can be bought cheaper in London than in Chicago. In London, bread is quoted at from two and one half to four cents per pound, while in Chicago it is quoted at from five to seven cents per pound." Bread in Pennsylvania sells at five cents for a small loaf, which weighs considerably less than a pound. Mr. Secretary Frelinghuysen says: "British bread is not white and light like American bread. It is more solid, and darker in color, and while probably more nutritious, it is less palatable, and of intrinsically cheaper quality." If the English wage-worker is willing to swap the "dark-colored, nutritious bread" of England for the palatable, light-colored, (and light weight,) and less nutritious bread sold in Pennsylvania, he has but to order his baker to put in less flour and more alum, for if picturesque color be of more importance than nutritious quality in bread, that is a change easily made. The United States exported in 1883 about eighty million dollars' worth of meat and provisions to the United Kingdom, yet we fail to find from the report of Mr. Secretary Frelinghuysen that great difference in retail prices for groceries and provisions that we might reasonably expect to find when we consider that, to a great extent, the English dealer depends upon this country for his supplies.

Much has been written by consuls and statisticians about "how the English wage-worker lives," what he eats for breakfast, for dinner, and for supper. We fail to see what bearing this has on the question of wages and cost of living, for if the tables of wages and tables of prices are given, we can calculate to a nicety how he *can* live, if he wishes, but how he *does* live, and what he chooses to eat, may be questions for the curious, but not the statistician, whose object is to first obtain the rates of wages, and then the purchasing power of those wages. The stereotyped expression in regard to the diet of the English wage-worker is: "He seldom has meat oftener than once a day, and his family has meat only once a week on an

average." What does this prove? Does it prove that he cannot buy meat, or that his taste does not run in that direction? We know that tastes differ, and we can imagine an Italian looking with eyes of commiseration upon the average wage-worker in Pennsylvania who never has maccaroni on his table, and who considers chestnuts a luxury.

The question of diet is one of science, and the wage-worker who abstains from the use of meat may not stand in need of sympathy half as much as the learned consul who bemoans his condition.

He who must depend upon manual labor for support for himself and family should eat the kind of food which is best calculated to assist him in doing the labor of the day. Manual labor requires muscle and energy, and he who eats food that will give him the most muscle and energy is more worthy of imitation than of pity.

Travelers tell us that the chief article of diet among the Scotch is porridge, but, (in the same breath,) "the Scotch are a hardy race." Certainly; and why not eat porridge if they like it? Since three penceworth of porridge will enable them to do as much work as thirty-six penceworth of meat. We here present two tables showing the relative value of different kinds of food in as far as value may apply to energy and muscle.

These tables are taken from "Mulhall's Dictionary of Statistics," and are said to be reliable.

Frankland's table of food required to lift a male adult (ten stone) ten thousand feet.			*Foot-tons of energy per ounce of food.*	
	Pounds.	Cost—pence.		Foot-tons.
Milk,	8.02	15	Cabbage,	16
Apples,	7.82	12	Carrots,	20
Fish,	6.37	75	Milk,	24
Potatoes,	5.07	4	Ale,	30
Beef,	3.58	36	Potatoes,	38
Ham,	3.00	38	Porter,	42
Bread,	2.35	5	Beef,	55
Rice,	1.34	5	Eggs,	57
Flour,	1.31	4	Ham,	65
Arrowroot,	1.28	15	Bread,	83
Oatmeal,	1.29	3	Egg, (yolk),	127
			Sugar,	130
			Rice,	145
			Flour,	148
			Arrowroot,	151
			Oatmeal,	152
			Cheese,	168
			Butter,	281

It will be seen from the foregoing tables that oatmeal costing three pence, or bread costing five pence is, either of them, equivalent to meat costing thirty-six pence. So that the question of what a wage-worker eats may be governed by considerations other than the supposed one of mere ability or

inability to purchase a particular kind of food. The following table of prices represents the prices paid in Liverpool, England, and the average prices paid in Pennsylvania.

Consuls make no mention of the important item of fuel, which in Pennsylvania will average not less than $2 00 per month for the run of the year. Neither do they make any statement concerning the cost of medicine and medical attendance, which in Pennsylvania averages $68 00 per annum, the average having been made from returns made by one hundred and nine wage-workers located in different parts of the State.

Retail prices of necessaries of life in England and in Pennsylvania, in cents per pound.

	England.	Pennsylvania.
Bacon, per pound,	12 to 20	9 to 18
Ham, " "	16 " 24	15 " 20
Beef, " "	14 " 20	12 " 22
Mutton, " "	16 " 20	12 " 18
Veal, " "	16 " 20	12 " 18
Pork, " "	16 " 20	9 " 16
Sausage, " "	16 " 20	13 " 16
Sugar, " "	4 " 7	6 " 10
Tea, " "	32 " 89	25 " 1 50
Coffee, " "	24 " 40	18 " 40
Butter, " "	24 " 32	16 " 35
Lard, " "	12 " 16	11 " 16
Cheese, " "	12 " 22	10 " 20
Rice, " "	4 " 8	3 " 7
Flour, " "	3⅓ " 4	3½ " 5
Cornmeal, " "	1½ " 3	1½ " 3
Oatmeal, " "	4 " 9	3 " 5
Bread, " "	2½ " 4	5 " 10
Potatoes, (bushel,)	50 " 60	25 " 75
Cabbages, (head,)	2 " 5	5 " 7
Codfish, per pound,	8 " 12	7 " 12

In the purchase of clothing, the English wage-worker has a great advantage over the wage-worker in Pennsylvania. In the matter of style or cut of the garments, the Pennsylvania wage-worker has the advantage, for it is customary in this State to pattern cheap clothing after the style of that worn by gentlemen of wealth and leisure.

This cheap imitation often induces the wage-worker to spend a sum of money for clothes greatly in excess of their real worth.

A first-class quality of cloth suitable for dress suits is not made in the United States, or if it is the merchant tailors and retail clothiers of Pennsylvania are in a fair way to lessen the number of the elect, since they invariably tell their customers that all their really good cloth is imported. A wage-worker can buy a suit of clothes in Pennsylvania costing from $7 00 up to $15 00, but the chances are nine to two that the seams will rip and the buttons fall off after a few days' wear. A suit of clothes fit for dress occasion, made of good material, will cost in Pennsylvania not less than

$35 00 and from that up to $60 00. Boots and shoes cost from $1 25, for working shoes, to $7 00 for real fine dress shoes. A medium fine shoe is sold for $3 00 per pair.

House Rents.

The item of house-rent is one of much importance to the wage-worker, for that is a continuous item of expense. The rent must be paid, and no allowance is made for loss of working-time. The wage-worker may economize on food and clothing, but, as he generally, in the first instance, rents a house as cheap as he possibly can, the alternative of moving to cheaper quarters rarely presents itself.

The average monthly rental in mining districts is about five dollars. In large cities, the rents will vary from five dollars to sixteen dollars per month for ordinary tenement houses. Consuls do not inform us much as to the question of rents, simply saying that they are cheaper in England than in the United States. Much is said by consuls about the squalid condition of wage-workers in some of the crowded portions of London, Manchester, and Liverpool. The same might be said of wage-workers in our large cities. There are tenement houses in Philadelphia, Harrisburg, and Pittsburgh in such extremely wretched and filthy condition that anything worse would be nothing more nor less than exaggerated nastiness. But the great majority of the wage-workers in Pennsylvania live in houses that are tolerably comfortable, and in most cases very clean, and bearing evidence of good management by tidy housewives.

Company Stores and Store Orders.

In conclusion it is fitting to call attention to the present system of store orders in vogue in many parts of Pennsylvania.

The existence of this system makes it more difficult to arrive at the real amount of wages paid to wage-workers. Operators, in many instances, report the amount of wages paid wage-workers as actual money paid to them, when the facts would warrant them in reporting fully two thirds of the amount as *groceries* and *provisions* paid in lieu of money. The prices paid by the wage-worker for groceries, provisions, &c., obtained on store orders, are equivalent to a reduction of from ten to fifteen per cent. of his wages. The system of "company stores" robs the wage-worker of an amount of money that is impossible to calculate, but enough is known to warrant the inference that he who, forced by circumstances, is obliged to accept store orders or deal at the "company store," is at the mercy of his employer. 'Pay-day" to wage-workers in the coal districts, and in some of the iron manufacturing districts of Pennsylvania, very seldom comes oftener than once in thirty days. The vast majority of wage-workers have no fund of money or store of provisions to sustain them until the day of payment will have arrived. A glance at the tables of working-time and wages that have been presented in former pages of this article will satisfy the most skepti-

cal that the want of such a fund or of such a store is not the fault, but the misfortune of the wage-worker. Now, this being the case, the wage-worker has resort to his employer for assistance until pay-day.

This assistance he obtains in an order on the company's store for groceries or other necessaries, and the price of these commodities is charged up against his pay.

Should he be so fortunate as to work full time for that month, there will be a balance paid to him in money, but this balance he is expected to spend in the company store, if he expects a continuance of favors. Even this may permit him to save a little money, providing he is provident and extremely wary, but suppose he loses one third or one half working time, and this is frequently the case, how is he to extricate himself from the meshes of enforced indebtedness into which the company store system has netted him?

It has been claimed by certain friends of this system that owing to the natural and other disadvantages incident to localities suitable for the mining of coal and the manufacture of iron, that stores kept by persons disconnected with the operators could not be relied on.

This objection is not tenable for several reasons. It is well known that company stores, or stores in which the operators are interested pecuniarily, are kept in towns and cities, where all the conveniences incident to a high state of civilization exist. But without going into a specification of all the facts that can be adduced to rebut the claims of the operators, let us meet them on their own presentation, and for the sake of the argument, admit the truth of it. Does it follow that the company should take advantage of the isolated condition of its employés and withhold their pay for thirty days in order to compel them to trade at the company store?

Could not the objections to uncertain stores be met by the operators opening and keeping open a store in which the employés could purchase on the coöperative plan, the company charging not higher than regular market prices for commodities, and then after paying legitimate expenses, declare a dividend, and pay that dividend to their employés? A recent decision in one of the common pleas courts of Allegheny county is to the effect that the operator paying store orders must afterward pay money, notwithstanding the fact that the plaintiff employé had received commodities for the store orders. Is this decision just, and is the plaintiff honest? Yes; we answer, yes, to both questions. The law of Pennsylvania forbids the keeping of company stores, or the payment of store orders in lieu of legal tender money. It was the duty of the defendant operator to familiarize himself with the law, and as a good citizen obey it. The employé was compelled to take store orders. He took them and used them until such time as he was independent of the coercing influences, when he demanded his rights under the law. In doing this he was justified by all the facts in the case. Had he refused to accept store orders, he would have lost his situation. Like the man who signed a bond, he did it to save himself temporarily.

It was a clear case of duress, and not that of dishonest practice; and had the operator not violated the law, he could never complain of its enforcement; and if the employé was dishonest in taking store orders and afterward demanding money, his dishonesty was but the result of the first dishonest act of his employer in making him an unwilling party in a scheme to violate the laws of the State, a scheme which, if successful, would benefit the employer at the expense of the employé.

The law was passed after much agitation, and was not the result of hasty legislation; and it is to be hoped that this recent decision will be followed by a general abandonment of a system that is vicious and in no wise beneficial to wage-workers, and calculated in the end to cause the employer more of annoyance than of profit.

TESTIMONY OF EMPLOYEES.

The following tables are compiled from returns received from employés throughout the State, and are in answer to questions contained in blank circular in relation to working time, cost of living, &c.

Occupations.	Children under 14 years earning wages.	Children attending school.	Daily wages.	Increase in wages in cents per diem.	Reduction in wages in cents per diem.	Time lost for any cause other than sickness.	Time lost through sickness.	Amount spent for medicine and medical attendance.	Time lost by strikes and lock-outs.	Groceries.										Provisions.					
										Family flour, sack of 24 pounds, cost of.	Family flour per barrel.	Cornmeal per pound.	Codfish, dry, per pound.	Tea, Oolong, per pound.	Coffee, Rio, per pound.	Sugar, brown, per pound.	Sugar, granulated, per pound.	New Orleans molasses per gallon	Soap, common, per pound.	Starch per pound.	Beef, roast, per pound.	Beef, rump steak, per pound.	Corned beef per pound.	Veal, fore quarter, per pound.	Veal cutlets per pound.	Mutton, leg of, per pound.
Blacksmith, Towanda,	..	.	..	..	20	6	...	$10 00	..	..	$6 50	2	10		18	7		$0 50	10	10	12½	18				
Do. Clermont,	..	3	$2 00	...	25	5	..	12 00	..		6 25	2	12	$0 75	20	7	9	75	8	10	11	12	10	10	15	13
Boiler inspector, Renovo,	..	..	2 80	...	50	3	8 65	...	..	$0 85	5 00	2⅝		50	20	7	8½	80	8	10	14	18	18		16	17
Boiler-maker, Pittsburgh,	..	1	3 50	...	..	45	8	1 16	...	88	6 00	4	.	65	17	8	10		8	10	18	15			20	
Do. do.	...	.	3 50	...	..	30	..	25 00	..	85	6 00	5	6	50	15	6	9	60	5	5	12	10	15	13	15	12
Do. do.	..	3	2 00	...	.	150		90 00	..	80	5 50	3	.	60	17	8	10	60			15	15				
Brick-maker, Mt. Pleasant,	..	2	2 00	...	20	30		20 00	..	75		2	.	60	17	10	12	80	10	10	14	18		7		
Cabinet-maker, Hyde Park,	..	.	2 00	...	.	.	.		..		7 25		.	60	25	7	10				18	16				16
Car-builder, Osceola Mills,	..	2	1 50	...	10	40	30	150 00	..	70	5 50	2¼	8	60	18	6	8	80	10	12	15	18	18	14	18	16
Do. Renovo,	..	1	3 00	...	.	.	3		..	1 63	6 50	2⅛	10	75	18	7	10	1 20	5	10	16	18		14	18	16
Carpenter, Osceola Mills,	..	1	2 25	...	.	55	10	30 00	..		6 00	3		80	20	8	8	60	10		16	18				
Do. Renovo,	..	.	1 68	...	42	6	.	35 00	..	75	.	2⅛	.	65	16	7	9	80	8	9	15	18		14	15	
Do. Towanda,	..	1	1 50	...	..	60	10	. . .	..	75	. .	2		50	22	6	10	75			12	14		10	14	10
Do. Troy,	..	.	2 25	...	..	90	..	.	..	.		1⅝	9	50	28	6½	9	75	5	12½	10	12½	10			
Do. Philadelphia,	...	2	2 75	.	..	42	..	20 00	..	78	6 25	2½	7	50	25	5	7	. .	5	10	20	22	14	15	25	20
Clerk, Houtzdale,	..	2	2 00	25	..	47	..	8 10	..		5 00	2	9	45	20	8	10	. .	8	10	16	18	18	12	14	
Do. Cambria,	..	.	.	.	..	.	..	.	..	65	5 45	1¾	10	60	14	6	9		5	10	12½	12½		12½	13	12
Cloth-sizer, Glen Riddle,	1	2	1 38	.	..	30	..	10 00	..	.	7 00	. .	8	60	25	6⅕	7⅛		7		22	25	12	12		
Dress-maker, Monongahela City,	...	...	75	.	..	60	..	. .	..	75	6 00	.	.	60	20	8	11	60	8	10	10	16				

Engineer, Hazzard,		5	1 80		20			25 00			5 50	2	8	60	16	6	10	75	8	8	12	15		10		12
Do. Towanda,			3 00			45	20	115 00		60	6 00	2	12	75	30	6	7	75	8	10	12	12	12½	11	12	12
Do. Wilkes-Barre,		2	2 48			15		35 00			6 00			75	30	7	9		5		16		18			18
Do. Mahanoy Plane,		4	1 83½							75	5 75		8	50	20	8	9	72	9	12½	18	15	12½	13	18	18
Engineer, (L.,) Renovo,			3 30			6		40 00			6 50	2½	10	50	19	7	9	85	7	10	16	14		16	16	16
Do. Scranton,		1	3 27					36 00		1 50	6 00	3		50	25	7	12		8	10	18	20				18
Glass-Blower, Scranton,		2	4 50			90	3	30 00			6 00			50	25	6	8	90	12	10	18	14	14	14	18	16
Do. Philadelphia,			6 00			48	12	6 00																		
Do. Hulton,			4 00			48		50 00		1 50		3		60	18	9	10	80	8	10	18	15	10	15	15	15
Do. Parker's Landing,			5 00			100																				
Do. Pittsburgh,		3	4 00			60		10 00			5 50				16	8	10		5	8	12				18	15
Do. Hawley,	1	1	3 50			80		10 00		1 80	6 50	2		50	25	10	11		10	10	14	18	10	14	12	12
Glass-packer, Pittsburgh,		2	2 00			90	8	15 00		60	4 80	5			17	8	10		5	10	15	15		15		
Glass-presser, Pittsburgh,		3	2 00			29	15	70 00		1 30	6 00	4	9	60	18	6	11	80	5	10	15	18	10	18	18	15
Gunsmith,		1						15 00			5 00			50	18		10	80	10		18	18	12	12		10
Iron-worker, Pittsburgh,		3	3 20			25	42	75 00			5 00	2½	5	60	22	7	12	72	5	4	10	15			15	
Do. Leechburg,		4	5 00			75		50 00		45	3 50	1¾	8	50	13⅛	6	8	70	5	6	12	15	25	12½	13	12½
Do. Apollo,		2				50			12	50	4 00	2	10	60	15	9	10	70	8	10	12½	15				
Do. Pittsburgh,		1	1 25		5	20		5 00		1 35		2½		80	17				5		15	15				12
Do. Glen Riddle,			1 87			38	12				6 00	3	10	75	30	6	7	56	6	10	20	20	12	14	25	
Do. Pittsburgh,		2	4 50			50		10 00		60	5 00	5	6	60	13	6	8	30	5	7	15	15	10	12	18	12
Do. New Castle,		2	5 00			170		60 00		1 35	5 00			50	15	7½	8	60	5	9	20	15		12	12	15
Do. Cannonsburg,			2 00			64	42	12 00		70	5 25		10	75	20	10	12½	90	5	10	20	15	15	15	20	15
Do. Pittsburgh,		4				100	30	78 00			6 40				18	7	9	45	6	16	15	18	12½		18	15
Do. do.		2	3 50		25	65		30 00			5 50	4	8	60	24		9	72	5	10	18					
Do. do.			7 00	3 00		100	12	12 00		65	5 20	3	8	1 00	16	8	14½	80	5	5	15	12½	18	13	15	10
Do. do.		4	6 00			100		25 00			5 25	4	6	70	25	6	9				15	13	10	12	20	15
Do. do.			3 50			100	2	20 00		1 20	4 50	5	8	1 00	12	6	10	20	5	6	12	18	10	12	18	15
Do. West Middlesex,						200		10 00		80	6 00	2	12½	1 00	14	9	11	80	5	10	12½	15	12½	12½	15	15
Knit-worker in cotton-mill, Phila.,			1 59			35	8																			
Laborer, Wheeler,		3	1 30		10	175	7	16 00	32		5 00	1⅛	10	1 00	18	7	9	75	5	8	12¼	15		10		12½
Laborer,						200	6	100 00			6 00		9	50	25	7	9		5	10	18	18		16	18	18
Machinist, Troy,		3	2 00		15	60	8	12 00		70	5 60	2½	6½	75	18	6	8	75	5	8	14	14	14	8	16	12
Do. Scranton,			2 25			4					5 25			60	32	8	9		9	10	16	20				16
Mason, Pittsburgh,		3	3 00		25	150	5	55 00			5 00			60	20	7	9		8	12	15	12½			20	
Mine-boss, Mt. Pleasant,			3 75		45	10	20	60 00		80	6 40	2½		80	25	10	12	80	10	10	14	16				
Miner, Rasselas,			2 00			3		25 00		1 70		2	12	60	18		9	55	8	10	12	12		12	15	14
Do. Kalmia colliery,	1	4	4 40		33⅓	2	5	75 00			6 50			60	20	6	8		8	10	15	15		10	15	
Do. St. Nicholas,		3	1 60			117	5	50 00		83	6 30	2½	8	50	25	7	8	80	6	8	16	16	9	11	18	12
Do. Irwin Station,		2	2 25			50	5	50 00		1 40	5 60	2		50	18	7½	8	70	6		12½	15				12½
Do. Banksville,			1 95		32	100				70	5 50			60	22	7	10		6		15	15				15
Do. Turtle Creek,	1	4	1 75		30	60	6	5 00			5 80	2	4	1 00	14	6½	7	70	5	9	14	14		10		15
Do. Neshannock,	1	3	1 25		10	150		50 00	40		5 00	3	10	60	18	8	9	80	7	10	12½	12½		10	12½	12½
Do. DuBois,		2	1 50					20 00			5 50		10	80	15	10	12	60	10		14	15	15	16	17	14
Do. Shamokin,		2				50	75	14 00			7 00		6		20	8	8	75	10	10	15					
Do. Banksville,			2 00			150		55		75		4	10	80	19		10	80	10	10	15	15	12½	18		10
Do. Dudley,			1 50				30	12 00		75	6 00	2¾		60	18	8	11	1 00	10	10	12½					
Do. Clermont,		1	1 50				36	9 00			6 00						9					18				
Do. Monongahela City,	4	3	1 50		50	95	6	18 00		1 25	5 00		7		15	7	9	65	8	8	12½	20	10	15	15	12½
Do. Mahanoy City,		5	2 75			116			116		5 80	2	10	75	25	7	12		5	10	18	20	16	22	22	
Do. Catfish,	5	4	1 20		20				70		6 80	1½	10	1 00	15	8		90	5	15						
Do. Wilkes-Barre,		2	2 50			113	77	90 00			5 50			75	30	8	10	60	3	6	16	18		16		18

TESTIMONY OF EMPLOYEES—Continued.

OCCUPATIONS.	Children under 14 years earning wages.	Children attending school.	Daily wages—average.	Increase in wages in cents per diem.	Reduction in wages in cents per diem.	Time lost for any cause other than sickness.	Time lost through sickness.	Amount spent for medicine and medical attendance.	Time lost by strikes and lock-outs.	GROCERIES. Family flour, sack of 24 pounds, cost of.	Family flour per barrel.	Cornmeal per pound.	Codfish, dry, per pound.	Tea, Oolong, per pound.	Coffee, Rio, per pound.	Sugar, brown, per pound.	Sugar, granulated, per pound.	New Orleans molasses per gallon	Soap, common, per pound.	Starch per pound.	PROVISIONS. Beef, roast, per pound.	Beef, rump steak, per pound.	Corned beef per pound.	Veal, fore quarter, per pound.	Veal cutlets per pound.	Mutton, leg of, per pound.
Miner, Brisbin,		4	$1 50		50	70		$25 00			$5 00	1⅓	7	$0 50	15	9	10	$0 75	10	15	16	18	20	12	15	16
Do. Barclay,	1	2	2 00			123		150 00			7 50	2	12½			8	10		9	8½	16	18		12⅛	14	15
Do. Jackson Centre,		1	1 70		5	30	8	6 00	3	$1 40	5 75	2	10	70	20	7	9	70	6	10	12½	15	30	10	12	12
Do. Bernice,		3	2 00		10	150			60		7 10		10	60	20	8	0	60	9	14	14	18				
Do. Kersey,		3							30	88	7 00	2		50	20	9	10	40	8	12	14	17		10		12
Do. Woodville,			1 55		16	167			2	70	5 50			75	16	7	9	70	10	10						
Do. DuBois,	1	4				204	5	167 00																		
Do. Clermont,			1 50		15		6			80					20	7		60	9		10	15				
Do. Wheeler,		2	1 75		25	162		300 00	8	1 28	5 25	5	10								12½	15				12⅛
Do. Broad Top,			1 25		14	200		6 00		50	4 00	2		60	15	8	9	75	9	10	14	16		9		10
Do. West Monterey,		3	1 40		10	100		25 00			5 40	2		60	17	9	10	75	7	10	9	15		12		12
Do. Tremont,			2 00			90																				
Do. Sharon,	1	2	1 45					20 00		62½	5 20	1¼	12	70	16	7	8⅛	80	7	8	14	15	15	10	14	12⅛
Do. Duncan,		3	3 24			55	24	28 50			6 50	3	8	50	18	7	8	80	5	10	14	18	10	11	15	15
Do. Mt. Pleasant,			1 00		10	90		50 00			5 60				20		11		5	10	12½	18				
Do. Stoneboro',		2	70		5	120	5	15 00		85	3 40	2	8	33⅓	13	6	6⅔	70	4	8⅓	12½	10	8	9	12⅛	12
Do. Dudley,		1	90								6 00		10	60	16	8	10	60		12½	14					
Do. Mercer county,		1	1 55		25	140	36	45 00	14		5 00	2	8	50	18	7	0	65	7	8	12½	15				
Do. Dudley,			1 25		20						5 00	2	8	60	16	8	10	75	8	10	12½	12				
Do. Pittsburgh,		4	2 50			100		100 00		70	5 50		5	80	20	12	14	90	8	11	15	12	9	8	15	12
Do. Dagus mines,			1 50		25	75	4	6 00	30		5 75	2	12½	60	18	8	11	60	8	10	10	18	8	12⅛		12¼
Do. Monongahela City,		2	2 00		50	150	15	12 00	18	60	4 80	2	15	80	18	9	11	75	8	11	18	20		15	18	12⅛
Do. Allenport,		1	1 70		85	90		5 00	90		6 00		8	60	20	8	11	75	8	20	15	18				
Do. Lost Creek,			1 25		25	100	30	10 00			6 30	5		80	20	9	10		8	10	16	16				18
Moulder, Allegheny City,			2 50		25	60		5 00		1 30				80	20	7	10	80		5	18			12		
Moulder,			2 85		15	156		33	96																	
Nailer, Sharpsburg,		3	4 75			90		8 00		65	5 00	¾		70	20	6	8	60	7	10	15	18				

Plasterer, Monongahela City,	. .	. .	2 50	. . .	50	15	15	5 00	. .	50	.	2	8	75	15	7	9	75	6	8	12½	20	12	8	15	12
Do. Philadelphia,		3	2 00	. . .	50	102	6	20 00	8	. . .	6 25	2½	8	75	20	5	6	70	6	7	20	20	20	12	25	18
Track-laborer, Clermont,	1	2	1 25	. .	12	.	. .	12 00	. .	.	8 50	.	12	80	20	8	12	1 00	10	12	14	16	10			
Printer, Towanda,	.	.	1 50	. .	. . .	12	4	15 00	. .	65	5 00	1½	.	50	20	6	7	60	5	8	14	12			. .	10
Slate-roofer, Pittsburgh,	. . .	.	2 50	. .	. .	40	6	10 00	. . .	80		. . .	.	70	18	. .	9	. .	5	5	15	12				
Steel-worker, Braddock,	. . .	. . .	2 50	. .	50	5	3	20 00	.	.	5 00															
Do. Homestead,	. . .	. .	3 00	. .	75	75	. .	2 50	. .	1 50	6 00	.		75	17	.	6⅔		8		14					
Stone-cutter, Philadelphia,	. .	. . .	3 50	. .	. . .	100	. .	40 00	.	.	6 50	4	4	60	25	6	7	80	7	10	20	25	18	14	22	12
Tailor, Philadelphia,	.	.	2 00		. .	.	10	55 00	. .	85			. . .	.	26	6½	6	.	8	8	18	22	20	12	12	9
Watchman, Allegheny City,	. . .	2	1 50	. .	. . .	. . .	.	75 00	. .	65	5 00	.	.	75	17	8	9	. . .			15	12½	10	12½	20	10
General average,	18	160	$2 45	. .	27	58	13	$67 79	36	$0 87	$5 63	2½	9	$0 64	19	7	8	$0 70	6	9	14	16	12	12	16	13

TESTIMONY OF EMPLOYEES—Continued.

OCCUPATIONS.	PROVISIONS.												CLOTHING, &C.										FUEL.	
	Mutton chops, per pound.	Pork, fresh, per pound.	Pork, salted, per pound.	Hams, smoked, per pound.	Sausage, per pound.	Lard, per pound.	Mackerel, per pound.	Butter, per pound.	Cheese, per pound.	Potatoes, per bushel.	Milk, per quart.	Eggs, per dozen.	Sheetings, per yard.	Flannels, per yard.	Blankets, per pair.	Toweling, per yard.	Men's dress boots or shoes, per pair.	Men's working boots or shoes, per pair.	Women's shoes, per pair.	Children's shoes, per pair.	Men's slippers, per pair.	Women's slippers, per pair.	Children's slippers, per pair.	Coal, anthracite, per ton.	Coal, bituminous, per ton.
Blacksmith, Towanda,		6		12½	12			24	16	40	6	26												$4 50
Do. Clermont,	15	10	18	15	11	15	10	32	16	50	6	32	10	50	$4 50	12	$3 00	$3 00	$3 00	$1 50	$1 25	$1 00	75	$5 50	2 00
Boiler Inspector, Renovo,	15	13		18		13		32	18	55	10	32	25	60	5 00	12	5 50	2 00	3 00	2 00	2 50	1 50	1 00	5 50	
Boiler-maker, Pittsburgh,	15	12½		12	10	10		35	17	80	8	30	30	35	7 00	10	4 50	2 00	3 00	1 50	1 50	1 50	1 00		2 50
Do. do.	15	10	8	12	10	8	9	35	18	50	8	35	8	35	3 00	8	3 50	2 00	3 00	1 25	1 25	1 00	1 00		2 40
Do. do.				12		10		30	15	60	6	30					3 50	2 00	3 00	1 40	1 00	1 00			2 50
Brick-maker, Mt. Pleasant,	15	8		18	16	12	6	22	13	50	8	20	9	35	5 00	10	5 00	3 00	2 00	1 50	1 25			11 00	1 50
Cabinet-maker, Hyde Park,	18	15		16	16					60	8	28												2 25	
Car-builder, Osceola Mills,	18	15	11	14	16	12½	10	32	18	60	10	28	30	50	2 50	15		2 00						6 40	1 25
Do. Renova,	18	16	12	14	18	16	15	35		50	10	35	80	50	5 00	10	5 00	3 00	4 50	2 25	2 50	1 25	75	6 50	3 00
Carpenter, Osceola Mills,			12			15	10	32	18	50	10	30	10	75	5 00		7 00	5 00	3 00	2 00				6 60	1 25
Do. Renovo,	16	13		18	16	13	10	30		50	10	32	20	60	5 00	10	7 00	3 50	3 00	1 00		1 50		5 75	
Do. Towanda,	15	12				12		22	16	30	6	22	7	20	6 00		7 00	3 00	3 00	2 00				4 50	
Do. Troy,		12½		12½	14	9		25	18	35	6	24	8	50		12½	5 00	3 00	2 50		50	75		5 40	3 00
Do. Philadelphia,	20	15		15	15	15	10	40	16	65	7	40	20	50	6 00	15	7 00	3 00	6 00	2 00	2 50	2 50	1 50	5 75	
Clerk, Houtzdale,			12	16	12	12	10	28	60	60	10	30	8	45	5 00	12	3 25	2 50	3 00	2 00	1 00	1 25		6 00	2 25
Do. Cambria,	11	9	9	15	15	11	10	28	18	55	8	28	10	50	5 50	14	3 75	2 00	3 00	1 65	90	65	35		1 60
Cloth-sizer, Glen Riddle,		15	12	15	15	12	15	40	14	60	8	40	12		10 00	16	5 00	2 00	3 75	1 75	1 50	1 25		6 50	
Dress-maker, Monongahela City,	12½	10	14	18	10	14		30	14	60	8	25	25	35	5 00	12½			3 00	1 00		1 25	75		
Engineer, Hazzard,		10	12	15	10	12		25	16	35	6	25	8	35	5 00	17	4 00	2 00	3 00	1 50					1 80
Do. Towanda,	15	10	12	13	12	10	12	25	14	40	6	25	9	40	5 00	8	3 50	2 00	2 50	75	1 25	1 00		4 50	2 50
Do. Wilkes-Barre,		12	12	16	16	16	12	28	11	50	10	30	8				5 00	2 50	3 00	1 50				3 25	
Do. Mahanoy Plane,	18	7½	9	18	15	15	18	36	15	50	10	36	30	50	8 00	12½	6 00	3 75	3 00	2 00	1 25	1 25	75	3 00	
Engineer, (locomotive,) Renovo,	16	16	12½	15	16	14	12	30	19	60	10	32	8	50	5 00	15	10 00	4 00	3 50	1 50	1 50	2 00		6 50	
Do. Scranton,	20		12	18		15	10	30	16	45	8	25	15	50	4 00		5 00	3 00	3 00		1 50	1 25		2 65	
Glass-blower, Scranton,	17	12	12	16	14	14	15	30	16	60	8	38	30	50	5 00	16	6 00	2 00	4 00	1 75	2 00	1 00	75	2 50	
Do. Hulton,		10	10	18	10	12		40	20	80	8	50	10	50		15	2 50	1 75	2 50	1 00	1 25	1 25	75		
Do. Parker's Landing,																	5 00	3 00							
Do. Pittsburgh,	15			20		12		37	15	60	8	35	6¼	35	5 00		5 00	1 50	3 50	2 00					

Do.	Hawley,	12	. . .	10	18	8	12	. .	25	16	40	6	30	10	40	7 00	10	5 00	2 00	3 00	1 75	85	85	75	4 00	4 00
Glass-packer,	Pittsburgh,	15	8	10	13	13	10	.	40	20	70	10	30		40	9 00	16	5 00	2 00	3 50	1 35	1 00	1 00	75		
Glass-presser,	do.	15	10	14	18	13	11	12	33	15	75	8	30	12	45	5 00	10	3 50	2 00	3 50	1 75	1 50	1 75	1 00		
Gunsmith,		15	15	13	16	16	15	10	30	15	60	8	30	10	50	6 00		5 00	3 00	3 00	1 50	2 00	2 00	1 00	2 50	
Iron-worker,	Pittsburgh,	15	10	.	18	12	10	5	33	10	60	8	30	8	35	4 00	12	7 50	2 00	2 50	1 50	1 25	1 25			
Do.	Leechburg,	9	5	8	12	9	10	5	18	15	40	8	20	30	35	4 50	$12\frac{1}{2}$	2 00	1 25	2 00	1 25	1 00	75	75	. . .	1 25
Do.	Apollo,	. .		.	15	10	10	.	22	15	50	6	25	8	40	5 00	. .	4 00	3 00	1 50	1 50					
Do.	Pittsburgh,		10			15			40		80	8	36				. .	6 00	1 50	2 00	90	1 00	1 00			2 50
Do.	Glen Riddle,	18	14	12	16	16	12	15	50	18	60	8	40	12	50	6 00		5 00	2 75	2 00	1 50	1 00	1 00	50	6 50	
Do.	Pittsburgh,	12	10	10	12	10	10	10	33	17	65	8	30	30	40	5 00	15	8 00	2 00	6 00	2 00	1 50	1 25	1 00	.	2 10
Do.	New Castle,	12	15	$12\frac{1}{2}$	18	10	10	12	25	15	80	8	25	8	25	3 50	10	4 50	1 75	2 00	1 00	1 00	1 00	50	.	2 50
Do.	Cannonsburg,	15	$12\frac{1}{2}$	10	18	15	$12\frac{1}{2}$	9	35	18	65	8	30		50	8 00	$12\frac{1}{2}$	10 00	2 00	4 00	2 25	1 50	1 50	1 00		
Do.	Pittsburgh,	16	$12\frac{1}{2}$	$12\frac{1}{2}$	15	15	15		45	18	60	8	30	.		. .	. .	8 00	2 50	4 00	2 00					
Do.	do.	. .		.	20	. . .	10	12	40	18	80	5	30	. .				4 00	1 75	2 50		1 00	1 00	. .	7 00	2 50
Do.	do.	$12\frac{1}{2}$	10	.	25	$12\frac{1}{2}$	10	18	40	15	80	8	30	25	38	6 00	10	4 00	1 85	2 50	1 25	1 50	1 50			2 25
Do.	do.	15	15	. . .	13	$12\frac{1}{2}$	8		38	18	75	10	35		38	8 00	.	7 00	2 00	5 00	2 00	1 25	1 40	75	8 00	
Do.	do.	18	12	10	15	13	10	5	39	17	75	7	28	10	40	3 50	8	8 00	3 50	3 00	1 00	1 25	1 00	75	. .	2 31
Do.	West Middlesex,	15	$12\frac{1}{2}$	.	16	15	$12\frac{1}{2}$	10	25	16	40	6	22	9	50	8 00	10	6 00	2 00	4 00	1 50	2 00	2 00	75		
Laborer,	Wheeler,	15	$12\frac{1}{2}$	$12\frac{1}{2}$	15	15	$12\frac{1}{2}$	10	16	15	40	6	20	8	45	6 00	$12\frac{1}{2}$	6 00	3 00	3 00	2 00	1 00	75	. . .		2 50
Do.		18	18	10	16	18	10	18	34	16	50	10	35	$12\frac{1}{2}$	50	9 00	15	6 00	5 00	3 50	2 00					3 00	
Machinist,	Troy,	14	12	12	13	16	15	20	28	16	50	8	25	9	35	6 00	15	5 00	2 50	3 75	2 50	2 00	3 00	50	5 40	3 50
Do.	Scranton,	16	15	14	18	16	13		29	16	55	8	26	35	50	7 00	18	6 00	1 50	3 50		1 00	1 00		2 75	
Mason,	Pittsburgh,	12	12	13	15	15	10		35	18	55	8	32	25	45	5 00	12	4 50	1 50	2 75	1 75	1 00	1 25	1 00		
Mine-boss,	Mt. Pleasant,	15	15		14	11	14	8	30	18	80	8	30		50	5 00	15	5 00	1 75	3 50	1 50	1 00				
Miner,	Rasselas,	15	14	12	16	14	13	5	20	16	50	7	32	22	50	6 00	8	3 50	2 25	3 00	1 25	1 75	2 00	60		1 15
Do.	Kalmia colliery,		14	14	16	15	14	16	32	16	50	8	35	25	35	6 00	14	6 50	4 00	3 00	2 00	2 00	1 50		3 00	
Do.	St. Nicholas,	18	16	12	16	16	16	18	34	16	55	10	32	35	40	6 00	14	5 00	3 50	4 00	2 00	1 50	1 50	50	1 75	
Do.	Irwin Station,	$12\frac{1}{2}$	$12\frac{1}{2}$	. . .	$12\frac{1}{2}$	$12\frac{1}{2}$	$12\frac{1}{2}$		35	18	60	6	35			5 00	$12\frac{1}{2}$	3 50	2 00	3 00	1 40					
Do.	Banksville,	15	12	12	14	12	12	. .	48	20	80	10	40		48	.	.	3 00	1 90							
Do.	Turtle Creek,	.	13		$12\frac{1}{2}$	$12\frac{1}{2}$	10		25	14	55	10	25	10	40	6 00	15	5 00	2 25	2 50	1 75	2 00	1 50	.	. . .	1 50
Do.	Neshannock,	$12\frac{1}{2}$	10	16	16	$12\frac{1}{2}$	$12\frac{1}{2}$	10	15	13	40	6	18	8	50	4 00	18	5 00	3 75	3 00	1 50	1 25	1 25	50	. . .	3 00
Do.	Du Bois,	16	12		18	15	15	10	30	18	75	8	30	. .	50	. .	20	.	2 75	. .	.	.	.	. . .	. . .	2 85
Do.	Shamokin,				15	14	.	. .	44	16	75		28	. .	91	.	10	3 00	1 25	1 75	1 45	.	.	. . .	. . .	2 35
Do.	Banksville,	12	12	$12\frac{1}{2}$	14	$12\frac{1}{2}$	12	. .	40	16	70	8	. .	.		9 00	10	2 65	1 90	1 75	1 60	1 00	1 25	. . .	. . .	2 43
Do.	Dudley,			.	17	. .	.	. .	30	.	50	10	25	10	40	.	10	2 50	2 00	2 25	1 25	. . .	.	. . .	. . .	1 75
Do.	Clermont,	. .	. . .	. . .	16	14	14	. .	30	14	50	6	30	10		4 00	.		2 25	.	.	.	.	. . .	. . .	2 00
Do.	Monongahela City,	10	$12\frac{1}{2}$	10	13	$12\frac{1}{2}$	10	8	30	16	70	10	25	10	50	3 00	15	8 00	2 00	2 00	2 00	1 00	2 25	1 25	. . .	2 00
Do.	Mahanoy City,	. .	20	15	15	20	16	12	36	18	55	10	35	10	90	7 00	12	6 00	2 00	3 00	1 50					
Do.	Catfish,	.	. . .	. .	15	.	. .	10	28	18	40	.	20	12	50	6 00	.	5 00	2 00	8 00	.	.	.	.	. . .	1 50
Do.	Wilkes-Barre,	16	16	14	18	14	16	. .	30	18	60	10	30	8	35	6 00	7	2 50	3 50	2 25	1 50	1 00	40	25	.	2 50
Do.	Brisbin,	16	15	15	17	16	14	8	30	17	50	10	30	10	40	6 00	10	6 00	4 50	2 25	1 75	1 00	1 25	1 00	6 00	1 75
Do.	Barclay,	16	10	$12\frac{1}{2}$	16	18	20	$12\frac{1}{2}$	25	16	50	8	25	20	50	5 00	15	4 50	2 50	4 00	1 50	1 00	1 00	65	2 00	
Do.	Jackson Centre,	15	$12\frac{1}{2}$	$12\frac{1}{2}$	16	10	10	10	25	14	40	5	22	8	40	6 00	14	5 00	1 90	2 00	75	1 00	1 00	75	.	1 60
Do.	Bernice,	14	14	. .	18	15	16	. .	24	18	60	6	30	25	60		15	.	2 50	2 75	1 50	. . .	.	.	2 50	
Do.	Kersey,	. .	12	14	17	. .	15	12	25	15	75	7	25	14	45	6 00	10	5 00	3 50	4 00	2 00	2 00	2 25	. .	. . .	1 25
Do.	Woodville,	. .	. . .	. . .	13	$12\frac{1}{2}$	10	10	36	16	70	8	30	9	45	5 00	10	2 25	1 50	1 50	1 00	1 00	1 00			
Do.	Du Bois,	. .	. . .	. . .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	.	.	.	.	.	.	.	.	.	. . .	.	2 25
Do.	Clermont,	. .	10	. . .	. .	12	12	.	30	15	. .	5	30	35	50	6 00	15	2 75	2 25	2 75	1 25	.	95	.	2 00	
Do.	Wheeler,	. .	. . .	14	$14\frac{1}{2}$	$12\frac{1}{2}$	15	8	25	16	35	6	20	10	50	6 50	$12\frac{1}{2}$	5 50	3 50	.	1 50	2 50	2 25	1 00	.	3 00
Do.	Broad Top,	. .	12	12	16	10	10	10	28	16	50	10	20	12	35	6 00	10	6 00	3 75	2 50	2 00	1 25	1 00	65	6 75	2 75
Do.	West Monterey,	12	12	14	16	10	10	9	20	15	45	7	18	10	50	6 00	10	5 50	3 50	3 50	2 60	1 00	1 00	75	. .	1 96
Do.	Sharon,	14	$12\frac{1}{2}$	10	14	$12\frac{1}{2}$	12	9	20	15	40	7	25			. . .	.	5 00	4 00	4 00	2 60	1 00	1 00	50	. . .	3 00
Do.	Duncan,	16	11	15	17	11	11	10	35	15	60	10	35	10	40	5 00	15	3 00	2 25	2 50	1 50	1 00	90	. . .	. . .	1 54

TESTIMONY OF EMPLOYEES—Continued.

OCCUPATIONS.	PROVISIONS.												CLOTHING, &C.										FUEL	
	Mutton chops, per pound.	Pork, fresh, per pound.	Pork, salted, per pound.	Ham, smoked, per pound.	Sausage, per pound.	Lard, per pound.	Mackerel, per pound.	Butter, per pound.	Cheese, per pound.	Potatoes, per bushel.	Milk, per quart.	Eggs, per dozen.	Sheetings, per yard.	Flannels, per yard.	Blankets, per pair.	Toweling, per yard.	Men's dress boots or shoes, per pair.	Men's working boots or shoes, per pair.	Women's shoes, per pair.	Children's shoes, per pair,	Men's slippers, per pair.	Women's slippers, per pair.	Children's slippers, per pair.	Coal, anthracite, per ton.	Coal, bituminous, per ton.
Miner, Mt. Pleasant,	. .	. .	12½	18	15	15	. .	30	20	80	4	30	15	50	$4 00	10	$3 00	$2 50	$3 00	$1 50	$1 25	$1 25	50		
Do. Stoneboro',	12½	10	10	14	10	10	8	18	14	30	6	20	8	35	4 80	12	4 00	2 50	300	1 50	95	1 25	50	7 50	1 80
Do. Dudley,	. .	12	. . .	18	. . .	15	. . .	30	20	50	10	25	12	50	. . .	12									
Do. Mercer county,	. .	12½	. . .	. .	. . .	12	. .	18	16	40	6	20	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	3 10
Do. Dudley,		7	14	18	16	13	10	30	20	50	10	30												. .	2 00
Do. Pittsburgh,	15	10	12	16	12½	12½	10	40	16	75	8	35	10	45	8 00	12	6 00	1 50	2 00	1 50	1 00	1 00	75	. .	2 35
Do. Dagus mines,		10	10	16	18	14	12½	25	16	50	7	25	12½	50	5 00	12⅝	6 00	4 00	4 00	2 00	1 25	1 75	1 00	. .	1 50
Do. Monongahela City,	14	12½	. .	16	10	12½	12	35	17	80	8	30	15	45	5 00	16	4 00	2 50	2 25	1 90		1 25	90	. .	2 40
Do. Allenport,		10	. . .	16	10	12½	12	35	18	50	10	30	12	45	9 00	12⅝	8 00	2 50	3 25	3 25	2 25	1 25			
Do. Lost Creek,	18	14	. . .	20	16	13		32	16	50	10	32	35	60	5 00	20	6 00	4 00	3 50	2 50	1 50	1 25	.	. .	2 75
Moulder, Allegheny City,		10	.	11	12	12		35	15	50	10	30	10		4 00	10	6 00	1 50	1 50	1 00				. .	2 00
Nailer, Sharpsburg,		8		15	12½	10	12	35	15	50	10	22	9	45	5 00	10	3 50	1 75	3 50	2 25	1 50	1 25	75	6 50	2 60
Plasterer, Monongahela City,	15	10	12½	13	12½	12½	12½	30	15	50	8	25	10	40	5 00	15	5 00	2 00	3 50	2 00	1 50	75	50		2 25
Do. Philadelphia,	18	16	14	16	14	12		45	20	75	8	40	30	40	5 00	20	9 00	1 75	5 00	2 50	1 50	1 25	1 00	6 00	
Track-laborer, Clermont,		14	12	16	14	16	12	25	16	60	6	20	9	60	8 00	16	6 00	3 00	3 00	2 00	1 25	1 25	.	.	1 65
Printer, Towanda,	16	14		16		12	10	25	16	40	5	28	35	50	.	15	5 00	4 00	2 00	75	1 00	1 00	50	5 00	4 00
Slate-roofer, Pittsburgh,		12		16	12	10		35	17	75	8	28		40	.	.	3 75		2 00	.	.	.	.	.	2 50
Do. Homestead				15		10		35	15	60	10	30	10	45	9 00	12⅝	4 00	1 60	3 00	1 00	1 50	1 00	75	.	
Stone-cutter, Philadelphia,	15	14	14	13	15	12	15	44	20	80	8	35	35	50	6 00	15	10 00	4 00	4 50	1 25	2 50	2 00	1 00	6 50	5 75
Tailor, Philadelphia,	12			18			16	45		60	8	45	. .		. . .		3 00	.	2 50		.		.	6 25	
Watchman, Allegheny City,	15	10	10	14	15	10		40	20	50	8	40	. .		.	.	.	.	.	.	.	.	.	.	2 25
General average,	14	14	12	13	15	13	11	31	14	56	8	29	15	45	$5 94	12	$5 16	$2 54	$3 00	$1 58	$1 38	$1 26	76	$5 23	$2 35

Remarks by Employees on the Condition of Labor in Pennsylvania and Europe.

[The following replies from employés were in response to this inquiry of the Bureau: "If for any extended period you were employed at wage-labor in Europe, state where and what was your occupation, and your condition then compared with your present condition in this country."]

Engineer, Hazzard, Mercer County.—Worked in Scotland as a railroad fireman. My condition is better in this country.

Glass-blower, Parker's Landing, Armstrong County.—Was employed in England for eight years at same occupation I now work at. I think the condition here better than there. But when I was there we were paid well, and taking into consideration the cost of living, I am of the opinion that the difference is not very great, *for a married man.* Still, I think the conditions are better here.

Glass-blower, Hawley, Wayne County.—I was employed as a glass-blower in Manchester, England. Worked forty-eight hours a week, and the condition was better than my present one, for in this country I work fifty-five hours a week, and have no time for lunch. In England we get a half hour out of every six hours for meals.

Iron-worker, Cannonsburg, Washington County.—Thirteen years ago was employed by a grain merchant in North Wales, Great Britain, my occupation being a weigher of coal, grain, &c. Was hired for six months for £10. Can now say, (was then unmarried,) my condition and circumstances were much better than at present; that is, considering the state of all branches of labor at present.

Ironworker, Allegheny County.—I was employed by the Ebbervale Company, (Limited,) in the county of Monmouth, Wales, as a heater. My wages here are twice better than in the old country. I am better off every way, and more contented than in the land of my birth.

Machinist, Lackawanna County.—I was employed in Monmouthshire, England, for about ten years, but I consider myself considerably better off here than there.

Miner, Irwin Station, Westmoreland County.—Ten years ago I was employed as check-weighman for the mines at the Cannock and Rudgley Company's "Shallow" Pit at six shillings per day. I think that was better than I am doing now. Wages were much better at that time than they are at present. It was in Staffordshire, near Cannock, England. It requires much economy on my part just now to make ends meet.

Miner, Turtle Creek, Allegheny County.—I was born in Scotland, and lived there till I was twenty-six years of age. I worked at coal mining; worked hard and pretty regularly. Lived in one room with one window in it. Wife and self had about four pounds of meat, two pounds of cheese, one pound of butter, half-dozen eggs, with flour, baker's bread, tea, and some potatoes for one week. Wages then were from three shillings to five shillings per day. I often earned the last-named sum. Saved enough to come to America, and have never had the remotest idea of going back again. I have been able to build myself a nice, comfortable home, well furnished, and

free from debt, with something laid away for a sore foot, as they say in Scotland. Have never seen the day in this country when I could not have four pounds of meat per day if I had wanted to use it. I have put my money that I saved in bank, instead of giving it to the whisky-seller, and that, after all, makes more than half the difference between capital and labor. If labor had the stamps, capital would respect it more.

Miner, Neshannock, Mercer County.—Staffordshire, England, coal miner, while working at my own trade. For the last few years, before leaving England, was employed at a brewery. When leaving England, we were in better circumstances than what we are at present. I would rather be on a good farm than in an uncertain coal mine.

Miner, Du Bois, Clearfield County.—I was employed as a miner in England, at different places. Made big wages there, but never as good wages as I did in this country. But in England we had only to work about six hours per day. That is quite a difference. Still this is far ahead of England, only I would like to see the eight-hour law passed, making eight hours a legal day's work all over the country. Then I believe it would be better for all parties, whether employer or employé. I earnestly hope it will not be long until it will be a law.

Miner, Clermont, McKean County.—I was a miner in South Wales. My condition was better there than here, I think. I had n't to work as many hours there as here.

Miner, Mahanoy City, Schuylkill County.—I worked in Oldham, Lancashire, England, at the age of fourteen, taking bricks away from the moulder in a brick-yard. Then, as now, I was working by contract, and used to work from daylight until dark, but then for a boy of that age I got good wages. I made nine pence per 1,000 bricks, and used to get away with from 5,000 to 6,000 per day in fine weather. In wet weather we would not work. I remember well, in 1863, at fourteen years of age, at the above business, I was the sole support of the family, consisting of mother, brother, and myself, and we were in easy circumstances. But I would sooner be in this grand old Keystone State, even in the present times, and they are the worst I have seen in it since the 3d of May, 1864, than in England with the best times workingmen get there.

Miner, Luzerne County.—Worked in Wales as a miner. Wages not as good as in this country; but, from everything that I have heard, there is not much difference to-day. The miners of Wales get nearly steady work all the year round, while groceries, provisions, clothing, and rents are far below the prices we have to pay in this country.

Miner, Brisbin, Clearfield County.—I was employed in Glenmorganshire, South Wales, mining in the early part of the year 1859. My condition in Europe was better then, I believe, than what it is at present.

Miner, Barclay, Bradford County.—I was employed as a miner in South Wales, and I think my condition was as good there as here, and it is still getting worse in this country for a miner, as we are working on ten per

cent. of a reduction since the 1st of January, 1885, and about half-time work. I think you ought to do something for the workingmen of this country, or else ship all the natives of China, Italy, Poland, and Sweden here right away.

Miner, Bernice, Sullivan County.—Was a miner in Scotland. Present condition better.

Miner, Du Bois, Clearfield County.—Was employed in Nova Scotia for a number of years, and was better off there than here. Will go back there as soon as I am able to go and take my family with me, as I found less tyranny by capital under the union jack than I have found by capital under our own stars and stripes. In Nova Scotia I was allowed to exercise any right guaranteed to a British subject by law, and my employers did not dare to say me nay; but here, under our boasted republican government, I am completely blacklisted and denied employment at my trade, for the reason that I am district secretary for the M. & L. A. A.

Miner, Wheeler, Mercer County.—Fifteen years in Scotland, fifteen years in this country, and I think if I had used the same economy in Scotland I would have been better off to-day. I have used the strictest economy in this country, and yet I am as poor to-day as the day I came to it. It would seem to me that the more a man tries to save the poorer he gets. I have often thought that if it were possible for us to live as the mules do, our employers would tell us that they were not getting enough for the product as would buy us corn.

Miner, Duncan, Allegheny County.—I have worked in the mines in Scotland, Glasgow district. My condition is materially better in this country, and were it not for the great number of working days lost during the year because of dull trade, my condition would be much better. Our manner of settling wages is by arbitration, and it would be very satisfactory but for a few grasping coal operators.

Miner, Mount Pleasant, Westmoreland County.—I was in England from 1875 to 1878, and at that time worked six hours and was paid six shillings per day. Living was cheaper. I am only making $4 per week in this country to-day, and am paying more for my living. We had two weeks' pay in England and paid cash for all we bought. In this country we are on monthly wages, and get all from the company store. We are compelled at present to leave all we make in the store, and if you don't you get no work.

Miner, Bethel, Mercer County.—I was employed for a number of years mining coal in Lanarkshire, Scotland. I consider my condition a great deal better here, because if I had lost as much time in Scotland as I have here I would have starved to death or been subsisting on charity. Still, I do not think my condition is as good as it ought to be in this country, on account of the injustice practiced on workingmen by our soulless corporations.

Miner, Allenport, Washington County.—I was born in Scotland, and

worked in the mines there until the age of seventeen years, when I came to this country. When I left that country I was earning three shillings and six pence per day. My present condition, bad as it is, is better than it was in the old country. But between "damphool" strikes and the importation of pauper labor into this country, it appears to me that we will soon get down to the European level, if we are not there now.

Miner, Lost Creek, Schuylkill County.—Born in Wales. Was a miner there when I left to come to this country. My last wages there were six shillings, $1 50. My condition has been better here, but not at present. My average wages are $1 25.

Moulder, Allegheny City.—I am an iron-moulder by trade. Have been in this country five years. I worked in Birmingham, England, for years, and my wages were six shilling per day of nine hours, and time and a quarter for over work. I think a workingman there in our trade, with steady work, is as well off as he is in this country, taking everything into consideration.

Stone-Cutter, Philadelphia.—I worked in Canada and received $3 per day of nine hours' work. Got boarding for $3 25 per week, and washing included, as a stone-cutter in St. John, N. B., in 1877 and '78. when the wages were only $3 for ten hours here. I contend that stone-cutters are not paid for their labor in the markets of the State of Pennsylvania, as they are receiving $4 50 per day of eight hours' work in New York city.

General Remarks on the Condition of Labor.

Blacksmith, Bradford County.—Times are very dull here, and many men are out of employment, while others are running on short time.

Cabinet-maker, Lackawanna County.—We have not had any strikes in the various branches of industry during the past year. The mines have not worked more than three fourths time, and the other branches of trade not much better, as they depend upon the coal trade. The subject of rents ought to receive more attention. They are entirely too high for the times and the present state of wages.

Carpenter, Bradford County.—A statement of my condition is very much the same as the other mechanics of this place. Through the spring, summer, and autumn, there is plenty for us all to do, but when the first cold blast of winter comes work shuts down, and unless a man is lucky enough to have a shop where he can make furniture, bob-sleds, &c., he is doomed to about three months of idleness. I am one of the lucky ones in this respect, but this work hardly pays my way in the winter, and is valuable only as it keeps my hand in and makes the winter seem shorter.

Carpenter, Philadelphia.—In my opinion labor is underpaid to the amount of $x + y$, an unknown quantity, and is represented by the amount of unsalable goods that accumulates from time to time, (under the so-called over-production,) creating panics and enforced idleness. If labor was paid nearer what it earned, (even allowing the manufacturers and dealers a

lion's share,) these unsalable goods would have been purchased by the wages earned, no panic ensue, production go on as before, and every one (employer and employed) would be the better off for it. But under the present system prosperity to the country does not mean prosperity to the workman, for we are in the condition of the children whose father gave them a cent to go to bed without their supper, and charged them that cent for their breakfast in the morning. So, during seasons of prosperity, we are permitted by overtime to earn a little more, but we are charged that amount and sometimes more in the increased price of living. My past year's experience has been such that my earnings went for immediate expenses, leaving nothing in my hands. This has been the experience of a number of others who have spoken to me, and some that I questioned on the subject.

Clerk, Cambria County.—The works here work very steadily, but wages are small and laborers receive but ninety-eight cents per day. A great many men have their own property.

Cloth-sizer, Delaware County.—Times are very dull about here at present. Some people are badly off. One mill in this neighborhood has been stopped for about a year, and another has been stopped the past four weeks. Both are cotton mills. The mill where my children work has run steady all the time, but a reduction in wages of ten per cent. was made on the first of January. A store is connected with the mill where all the employés have to make their purchases. It sells as reasonably as any of the other stores around here.

Engineer, (Locomotive,) Clinton County.—There has been a reduction of about ten per cent. in rents. A slight reduction in all goods.

Engineer, (Locomotive,) Lackawanna County.—The average number of days worked by most men is twenty per month. Wages from $1 00 to $2 25 per day.

Glass-blower, Philadelphia.—We have had no strike, but the firm is always driving us so as to make more work in a day, which it is impossible to do, as it takes all our time to make a day now. There is no change in rents, which are certainly too high at present. All workmen are complaining of high rents.

Iron-Worker, Allegheny County.—At the present time there is scarcely any work, and men that have work can scarcely get along with the wages. Rents are high and so are provisions. Two rooms rent from $7 to $10 per month. I have been in Pittsburgh eighteen years, and never saw times so hard as now.

Iron-Worker, Delaware County.—In this village there are two large cotton and woolen mills. They have been running on half time for the last two months. Cause, over-production, which an eight-hour law, if strictly enforced, would, in my opinion, do much to remedy the evil.

Knit-Worker in Cotton Mill, Philadelphia.—We have still to complain of the great deficiency of sanitary regulation in our mills and work-shops by which the health of the work-people is seriously interfered with. Why

should the employés be compelled to work in rooms which are not lime-washed more than once in six or eight years, and this, too, in a noisome atmosphere, where dust and oil, and sometimes escaping steam, offend the sense of smell? Of course, we know if we do not like it we may leave it, but this is not always convenient for the workmen. There are many hardships awaiting the man who dares point out these evils to his employer. "The weak have to go to the wall." We hope the Legislature will see fit to pass a law for the better regulation of mills and work-shops, and, also, appoint inspectors to see that the law is properly carried out. In England, all mills and work-shops are under inspection, and have to be lime-washed once a year at least. Why should the workingman's health be less cared for here than there? We hope there will be some means taken to investigate the evils of which we have given you a very imperfect outline.

Laborer, Schuylkill County.—During my time, thirty-three years, in Schuylkill county, I never witnessed so poor a time as the present. The cause, in my opinion, is the surplus of unskilled labor, especially concerning Polanders and Hungarians, emigrating to the coal fields. They are willing to work for anything the bosses are pleased to give them, especially the Hungarians.

Miner, Westmoreland County.—Our complaint is that the pay-days are too far apart. Sometimes four weeks and even five intervene. Pay every two weeks is desired by the men.

Miner, Allegheny County.—We have not had any strike since May, 1883, in this district. At the above date an arbitration board was organized, and we have since worked harmoniously under its guidance. Although sometimes not altogether satisfactory to quite a number of men, the majority are entirely satisfied with its working. For myself, I am clearly convinced that Senator Wallace made a step in the right direction toward solving the wage question when he framed the bill legalizing arbitration boards. For instance, look at the river miners. During the last year, they have been continually striking, or on the verge of strikes or defeats, and finally have been forced to yield and go to work at $2 50 per hundred bushels for lump coal, being a little over sixteen per cent. less than the railroad districts are receiving under arbitration. The past year has been the severest on workingmen since the year of the panic. Wages perhaps in general did not reach as low a figure as during the three years following the panic, but there have been more men to do what little work was being done than formerly. Provisions and other necessaries of life have also been somewhat higher, excepting flour and potatoes.

Miner, Clearfield County.—This town has four company stores, and all of them charge from three to five cents a pound on each and everything bought more than the other stores have; dry goods, from five to ten cents a yard more; flour, from one dollar to two dollars a barrel more, and the same in proportion for all other articles. The miners have to deal with these company stores, or consider themselves discharged. Until the Legis-

lature will pass some stringent law preventing all companies, whether coal or otherwise, from using the workingmen in this way we never will have peace or get justice. I would like to see the company store system abolished, and a law passed compelling all companies to pay their workmen at least every two weeks. That would benefit the business man as well as laboring man, in helping the former to pay cash for their goods, and the latter to buy cheaper. The number of working hours here is ten per day.

Miner, Allegheny County.—I believe all around this section of Pennsylvania, for the last year especially, the laboring and mining classes must have suffered very much, for many places have not worked half time. As regards arbitration, I think it is one of the best things ever thought of to settle disputes. Why, every one should give it his earnest consideration. It is only in its incipiency, and a great question like this must be nourished before it thoroughly develops itself. As to the conspiracy laws in Pennsylvania, I really believe they are too strict. If I am working at a place where a body of men are working, and another body of men next to us will yield to work for a less price, and by doing this take our trade and the bread out of our mouths, I think we ought to have a privileged right to go and reason with them about doing such an act of injustice, either at the place where working or any other place. Then again, so long as the miners work eleven and twelve hours per day, and are away from home thirteen and fourteen hours, we can't expect much time to develop or cultivate our mental and social qualities. And so long as we don't respect ourselves, and see that the eight-hour law is put in force, we may never expect to see ourselves, or yet the rising generation, do any particular good.

Miner, Washington County.—The company stores charge from two to five cents per pound more than other stores, and most of the miners are compelled to deal with the former on account of the pay-days being so far apart, sometimes thirty days and sometimes six weeks. When a strike takes place the stores are all shut, and the consequence is that the miners are forced to accept the operators' terms.

Miner, Schuylkill County.—I beg leave to state, as my opinion, that if we could get the State Legislature to repeal the conspiracy laws, pass a strict eight-hour law, and a strict arbitration law, and then for the workingmen to organize themselves into one grand consolidated union, we would have the best state of affairs that ever existed in Pennsylvania.

Miner, Clarion County.—This mine has not been working steadily. First three months about half time, next six months about one third time, and last three has done nothing at all. We have a "pluck-me" store here, which is run on the style of sutler tents in the army.

Miner, Luzerne County.—I think the miners and laborers who work in the coal mines are the worst-paid class of workingmen on earth to-day, taking into consideration the danger they have to go through every day of their lives. The system of docking the miner to-day is worse than ever before in the anthracite coal region. If two or three hundred pounds of

dirt or bone are found in a car, the miner will be docked for the whole car and stopped from working for a day or two at the mercy of his boss. I think it is injustice on the part of the company to rob the workingman, and stop him from working for a day or two beside. We often talk about the condition of the slaves in the South before they had their freedom. I am compelled to say our condition is far worse to-day, when there are hundreds of our fellow-men who cannot get what they ought to eat, and are willing to work at the same time.

Miner, Mercer County.—As regards the bituminous coal fields of Pennsylvania, I would say the present code of laws governing the same needs a radical change. It is a very hard matter to undertake to instruct a great part of the men working in and around the coal mines. This was proven when the Legislature passed the act in regard to merchantable coal. It is known as the screen act. Although the intelligent part of the miners tried to impress upon the minds of their fellows the defects existing in the act, yet they were eager to jump at any conclusion or rendering of the law in their favor, and the consequence was a bitter strike, which lasted three months. It proves beyond a doubt that when the Legislature contemplates passing laws for the benefit of coal miners and laborers there should be a penalty attached making it binding on all concerned.

Miner, Huntingdon County.—There appears to be a desire on the part of all laborers to have the time reduced from ten to nine hours; that is, nine hours to constitute a day's work, and a penalty affixed upon parties who see proper to exact more than nine hours for a day. About furnaces and places where work is continuous, nothing less than twelve hours is expected, but about mines, nine hours is long enough for any one day.

Miner, Schuylkill County.—It would be a blessing if the eight-hour system was fully established all over the coal region. The collieries in England to-day hoist coal but eight hours, and forbid any boy under fourteen years of age to work inside or outside of the mines. We have hundreds of boys picking slate only nine years old.

Miner, Mercer County.—The first three months of the past year I was engaged at mining coal at Neshannock. My average wages were about $35 a month. This, however, would not have been the case had I remained in the mines the year out. The mines in this locality are doing better now since the holidays than they did all last summer.

Miner, Allegheny County.—The company store here is about fifteen per cent. higher than the other stores in this locality. Eighty men are employed in the mines where I am, and twenty-five outside. The highest miner has made $300. We have only worked three full days the last seven months, and are only working half time now.

Miner, Washington County.—I consider eight hours long enough to labor in the mines in foul air, as many miners have to do on account of the mining law not being enforced in many places. Then we should not produce so much coal per day, thereby keeping the market in a healthy condi-

tion. Then a workingman could have time for rest and mental improvement, and cultivate social qualities that would result in the mutual benefit of himself and co-laborers and society in general. As it is at present, he has not time to improve the mind or give the system rest. I believe that God intended the day should be divided so as to allow eight hours for work, eight hours for sleep, and eight hours for recreation and cultivation of the mind.

Nailer, Allegheny County.—Our system of work in this section of the country is ten hours per day.

Plasterer, Philadelphia.—I am of the opinion that if employers made less cry of dull times, and would quietly reduce the working hours, instead of maintaining full hours and cutting wages, consumption would keep pace with the supply, and those who would be at work would purchase with more spirit, and in time trade would find its own level. This country owes its success to the fact that labor has been better rewarded here than in any other nation on the face of the globe; therefore I am of the opinion that the importance of keeping honest labor employed at a fair and just compensation should receive the greatest consideration. I think no more equitable plan could be adopted than by reducing the working hours to keep pace with the demand for labor's products.

Salesman, Scranton.—There is a general depression throughout this city in all branches of industry. About ten of the largest mines in the valley have shut down for an indefinite time. The holiday trade was not as good this year as last in this city by about thirty per cent. There are at least 3,000 men out of work in this city at present.

Steel-worker, Allegheny County.—There are only four or five men employed here that receive $3 00 per day and over. The wages of the other men range from $1 25 to $2 50 per day. Rents are very high. There are about two hundred men unemployed here now. One hundred and fifty of these have not done more than eight or ten weeks' work during 1884, as the finishing department has been idle the rest of the year.

Steel-worker, Allegheny County.—The mill in which I work is at present idle on account of no orders. The laborers and mechanics have been reduced in wages from ten to twelve and a half per cent. Our wages at this place have been reduced every year but one since 1876.

Tailor, Philadelphia.—Reduce the hours of labor, prohibit the employment of children under fourteen years of age, appoint an inspector of factories and dwellings, prohibit all discriminations by railroads, and in the name of God and humanity prohibit the manufacture and sale of intoxicating drinks. Among all the evils, rum is the worst. Millions of mothers and children will forever pray for the first Legislature that will bring to them their only salvation.

Twister in Cotton Mill, Delaware County.—I think if there was an eight-hour law to apply to all branches, and some one appointed by the Governor to see that the law was enforced, it would work to the best interests of the

employer and employed. I think it would stop the over-production that the employers complain so much about. Another evil that ought to be remedied by law is that in some localities employers own stores and compel their hands to deal with them or be discharged. The result is that with the large profits they realize from their stores they can sell their goods for less than those manufacturers who do not have stores.

IMMIGRANT LABOR.

The Importation of Contract and Other Laborers from European Countries.—The Effect of Their Colonization on the Working Classes.—Pertinent Matters and Remarks.

The importation of contract labor and the voluntary immigration of persons seeking labor in America, large numbers of whom come with no intention to remain, have grown to be matters of the greatest interest to our industrial classes. Until within a few years ago, the constant stream of immigrants which poured into this country from nearly all foreign nations beyond the seas created little or no apprehension that any of America's interests would be seriously affected by it. America has always opened her doors and welcomed the poor of other nations. Our great mineral wealth, broad expanse of territory, and other unlimited resources, have proven not only attractive but afford inducements by which our land has been peopled and this country has grown to its present grandeur, strength, and high rank among the nations of the globe. As long as America was sought by the needy, industrious ones who came here to grow up with the country and make it a home for themselves and theirs forever, our interests, as well as theirs, were subserved, a mutuality of benefit being the result; but latterly the character and intentions of the newcomers have so changed as to create a revulsion of sentiment on immigration matters, and grave apprehensions and questions have arisen as to the propriety and advisability of a too free encouragement of immigration and importation of labor from certain foreign ports, in which our own State is probably more deeply interested than any other in the Union.

These questions have become of so grave moment that they appealed to this department to institute an inquiry into the means employed to induce immigration of what is often termed the pauper-labor of Europe, the effect of the colonization of certain classes on our native and adopted industrial element, on the industries themselves, and kindred matters closely related to the coming and settlement of these people among us.

Such an inquiry was clearly within the province of this department, and with the consciousness that the subject would present features, a knowledge of which would be of great benefit to our legislators in framing laws bearing on labor matters, such an inquiry was instituted, and the result embodied as part of this report.

In the treatment of this subject, particular attention has been given to the following points, and the inquiry prosecuted with a view of elucidating the fullest information respecting them:

1. Immigration of Italians, Poles, and Hungarians, and the countries from which they come.

2. The economic condition of those countries, the kind of labor of the inhabitants, their earnings, style, and cost of living.

3. In what sections of this State the immigrants settle, the industries they engage in, and the wages they are willing to work for.

4. Those classes which become Americanized, and by an increase in their cost of living, demand wages commensurate to those paid to American laborers.

5. Those who, having saved a few hundred dollars by the practice of the most rigid economy, return home, and to what extent their savings improve their condition.

6. Those who, remaining in this country, enter into agricultural, mercantile, or other pursuits, and those who accumulate property, become citizens, &c.

7. Their moral condition in their own countries, and their habits in this country.

8. Their educational condition. Can they read and write, and do they, or not, coalesce with the American people?

9. Do they make good, moral, and law-abiding citizens, and are they a desirable class?

10. The means, if any, employed by steamship and other companies or individuals to induce immigration, and the cost to each immigrant.

It was found more practicable to treat the above points together as far as possible, but under separate heads, with reference to each nationality.

Italians.

Italy has, for many years, shown a partiality for America over all other countries, in sending to our shores her illiterate masses. The Italians were amongst the earliest immigrants, and are, next to the Hungarians, the least desirable. The large cities are crowded with a class of Italians who are, for the most part, non-producers. Abhorring agriculture, they cling to large cities to eke out an existence by the most menial pursuits. There are, of course, exceptions. Many Italians have made America their adopted home, and some have grown rich in mercantile pursuits, but our inquiry pertains especially to the hordes of lower classes, who have been brought here under contract labor.

In the last report of this department, reference was made to the charge that contractors, through their agents, "contract in Europe for labor to be imported to work at a price much below the minimum price paid to our own mechanics and laborers," and the evil effects of the system were reverted to. It has been found that the charge referred to was not ill-founded. The pernicious business was prosecuted to such an extent that it called for a prohibitory act of Congress, which was intended to check, if not entirely suppress it. Admittedly, the importation of contract labor has been

checked, but by no means suppressed, and it will require one or more convictions by the courts before the good results intended by the act will be manifested. This importation, by contract, of paupers from Italy is carried on still, in open defiance of the law, and the result is the elevation of labor is greatly hindered by the competition created.

Italy, one of nature's garden spots, a country great in natural resources, has sent more mendicants to America than any other country. Over-populated, and with an internal system which does not provide to keep her poor employed, she sends her over-plus population from home to work, beg, or starve in other lands. With some of the very best staple products, including corn, oil, raw silk, hemp, flax, and cotton in abundance, its economic condition is one of the worst. Her exports are varied and rich; but the people that leave her shores to come to America under contract to labor are the most abject. They are mendicants, the lowest class of paupers. Worse than slaves, they are brought here under contract, and when the particular work for which they contracted is done, or the money worked out that it cost to bring them here, they are turned adrift. Subsequently, many of them are found hiring for themselves at street-cleaning in cities or railroad work in the country, and many of them return to the pauper life they left at home.

Since 1882, the Italian colonies in this country have been growing rapidly. In Pennsylvania, this is especially true. In the Italian quarter of Philadelphia alone, there are upward of seven or eight thousand, less than one hundred of whom are citizens. Many of these came here under contract. An idea of the proportion in sexes of these immigrants, as also of Poles and Hungarians, may be had from the immigrant statistics of the port of Philadelphia since 1881. The total number of all immigrants that landed there in 1881 was 36,236. Of these, 351 were Italians: 281 males and 70 females. In 1872, the total was 23,473, of which 149 were Italians: 122 males to 27 females. In 1883, the number was 33,251, and of Italians, 128, of which 100 were males and 28 females; and in 1884, 19,066 were landed: of which there were 33 Italians, 30 men to 3 women. Thus, of this whole number of immigrants who arrived at the port of Philadelphia in the past four years, the proportion of Italians to the whole is but one eighteenth. Some of these came under contract, but by far the greater portion who find their way into Pennsylvania have been brought first to New York. In the past four years, 1,605,088 of all nationalities were landed in New York, and the proportion of Italians, male and female, was about the same as at the port of Philadelphia.

During the same years, there arrived at Philadelphia from Austria and Austria-Hungary 1,058 immigrants, of whom 180 only were females; and 3,575, of whom only 824 were females. The proportion of Hungarians to the whole number arriving at one port is thus shown to be one in one hundred, and of Poles one in thirty. Yet of Hungarians, more have actually arrived in seven years past than of Poles. The hegira from Poland began

about seventeen years ago, (in considerable numbers in 1873,) and that from Hungary seven years ago, while from Italy it has been going on for over fifty years, yet pauper labor brought here under contract is not traceable to any extent further back than 1881.

These Italians mostly come from Naples and vicinity, where they have lived in pauperism, filth and vice, with no higher ambition than to get cheap food enough to keep alive. Uneducated and slovenly when they come, they never improve, and follow the mode of living here they practiced at home. They are immoral, illiterate, low, and vicious, and only the fear of the law's punishment, of which they have a fearful dread, keeps them disciplined. They are mostly controlled in gangs by one of their own nationality, a sort of sub-contractor, who procures them for the labor to be performed and draws their wages, giving them from seventy-five cents to a dollar a day and keeping twenty-five cents a head for himself. These gangs number six, eight, ten, or twelve, as they are wanted. If they cannot get a dollar a day they will take eighty cents; in fact, they appear to care to earn only enough to live on and indulge in an occasional cheap spree, a dissipation which is generally had in their barracks or shanties, and usually results in fights which bring some of them to jail. In the large cities where these people mostly congregate, especially in the winter and when not at work at street-cleaning, they will employ themselves with hook and bag on the ash commons and about garbage barrels, their daily earnings being measured by what they find of value and can turn into money, be it a rag, a bone, or a stray silver spoon. They do not coalesce easily with Americans, either native or adopted, and few become naturalized. A few, very few, are frugal enough to save enough to return to Italy, some of whom return to our shores again and repeat their experience.

The illiteracy, turpitude and degraded habits of this class of immigrants, innate and lasting as they are, stamp them as a most undesirable set, whose affiliation with our own people must in time work great injury.

Poles, or Polanders.

Poland, which in 1832 was made an integral part of the Russian empire, headed by a viceroy of the Czar's choosing, and, after repeated insurrections, was finally, February 28, 1868, by ukase of the Czar, absolutely incorporated in the Russian government, has ever since been governed under despotic rule. With a soil well adapted for cereal crops, (similar to our own,) much of its fertile land in permanent pasture of the richest quality, with inexhaustible mines of salt, a little silver and iron, copper and lead, as its other chief minerals, sends its overplus population of the middle classes and serfs to better themselves in America. The two main classes of people in Poland are nobles and serfs, the latter being attached to the soil—not to the master—and characterized by more energy and dignity than slaves. Here they come to stay, having shaken off the yoke of tyranny and asserted a manhood which was nearly crushed. Subject to

military duty at home, they fly to a land of liberty while young—between the ages of sixteen and twenty-two years. Polish immigrants are mostly the sons and daughters of small farmers. About one half can read and write when they come. The adults who cannot read when they get here never learn. The rage in Poland among young people is to learn to read print, and nearly all who come can at least do that. Those who have children send them to school here as soon as they are old enough to go. This evidence of the Pole's desire to improve his condition is noticed from the first. Having been reared in frugal ways, they retain them. But few of those who have come here have gone to farming, preferring occupations which offer quicker returns. They are a fairly intelligent class, living cheaply but substantially in Poland. Arriving here, they huddle together in close quarters, living meanly and filthily until they can better their conditions. Their better nature asserts itself soon, and it is a common thing to learn of Poles who, after a few years of experience here, have entirely changed from being little better than beasts to a life of comparative luxury. After a time, they compare favorably with the best of other nationalities, mix early and freely with our own people, intermarrying as often with the Irish and Germans as with their own nationality. Where they are colonized in sufficient numbers, as they are in Schuylkill and Luzerne counties, they are quick to organize congregations and build churches. In occupation they are mostly miners and laborers, but become clothiers, grocers, shoemakers, and saloon-keepers. Their largest settlements are in the towns of the coal-mining regions. For instance, in one section of the State, comprising the towns of Shenandoah, Mahanoy City, Girardville, Mahanoy Plane, Frackville, Gilberton, in Schuylkill county, there are two thousand male Poles and Lithuanians, (the latter natives of Lithuania, a grand duchy of Poland,) the proportion being four Lithuanians to one Pole. With these are about two hundred women and three hundred children. In the bituminous coal and coke regions are also settlements. Few reside in large cities.

The Pole's peculiarities are few. He does not seem to have many characteristics uncommon in other foreigners. Mixing freely with our people, he soon becomes Americanized.

The Pole's first employment is as inside or outside laborer at the mines, and he is willing, at first, to work for almost anything. Thus trusting, they are often, at first, imposed upon, but they soon learn the drift of affairs and demand the regularly paid wages, and they will strike, like others, if their demands are not met. During the past winter, some have earned (as miners) the average price paid—$10 20 per week—while as laborers they got $7 50, $6 00, and $5 00 per week. Those who have adopted mercantile pursuits are the frugal ones who, by economy and ambition, have saved money when good wages were paid. Some have become property owners. In Shenandoah, the real-estate valuation of property owned by Poles is $100,000; in Mahanoy City, about $35,000; and in other towns

in the State, more or less, in proportion to the Polish population. It is the early ambition of the settled Pole to become a citizen. The percentage of citizenship among the entire Polish population in this State is ten, and it is rapidly increasing. Litigation appears to be second nature with them. Poles and Hungarians resort to law on the most trivial pretexts, but their cases are generally in the criminal courts, for fighting among themselves, or stealing from one another.

Their occupation in Poland is farming when they can get work, which there is scarce, but they will seldom work on other than the farms of their relatives. A day's wages for the farm laborer in Poland is half a rouble, about twenty-six cents in American money, and worth for living purposes there as much as one dollar here—one rouble in Poland having the purchasing value of two dollars and twenty-five cents in this country.

The few who are mechanics and builders can earn a rouble a day. Their moral condition at home is fair. Their habits here are sufficiently described above. Inebriety is a curse with them, as with other nationalities, but to no greater extent. Once here, they seldom return to Poland, except for a brief visit. They compare favorably with other immigrants who are frequently styled the most desirable, are generally law-abiding, and make good citizens.

Hungarians.

But the evil effects of the importation of Italian and other pauper labor, bad as they are, working gross injustice to our working classes, whose social and moral positions suffer degradation by the contact, sink into comparative insignificance when we come to speak of that worse class—the Hungarians.

Hungary is an agricultural country in the strictest sense of the word and constantly improving. The impression that Hungary must be a miserable country is natural when we look upon her representatives as they live here, but nothing is so far from the truth. Thirty years ago the soil under tillage in Hungary was 22,651,438 English acres, and the pasture land 5,662,299 acres, and gradual improvement has since been going on. Landed proprietors have introduced English machinery, and we are told by historians that Hungary is far advanced in agriculture. It is really so, and what is more, it is rich in mineral products, chiefly coal, nitre, sulphur, alum, soda, saltpetre, gypsum, porcelain earth, pipe-clay, asphalt, petroleum, marble, and ores of gold, silver, mercury, copper, iron, lead, zinc, antimony, cobalt, and arsenic. The mineral wealth is said to be inexhaustible. Other facts briefly stated will not be out of place. The climate is healthful; there are educational colleges for classical studies and schools of industry and commerce. Tobacco, hemp, flax, rape seed, and timber of every variety would be extensively exported were the means of communication developed and commercial intercourse guided by a more liberal policy. Ten years ago, there were altogether 82,570 spirit distilleries, of which

991 were substantial factories, and 81,579 rural stills. Then the active breweries were 247, of which 211 were in the mother-country and 36 in Croatia and Slavonia. There were besides, 20 sugar refineries and about 30,000 flour-mills of various kinds, of which 25,000 were in Hungary proper and Transylvania. In fact, the preparation of flour is one of the most important industries of Hungary. Of railways—in 1879 there were 4,400 miles in operation, 18,000 miles of highways, 2,500 miles of navigable river and canal communication. The imports were estimated at £45,000,000 and the exports at £35,000,000. In its form of government, Hungary is a constitutional monarchy, with a king and two houses of parliament. The language is Magyar, of Asiatic origin. The population at the last census was nearly sixteen millions.

With all these advantages, the economic condition of Hungary is constantly growing poorer, paupers are multiplying, and the country finds no means to keep its overplus population employed. Its compulsory education is not exerted with sufficient force, and the illiterate are multiplying.

The occupation of those who work in Hungary is principally farming—those with whom this country has most to do. They leave Hungary because they are poor, and come to America, where they can get work and earn money enough to return to Hungary to live in comparative affluence.

Since 1878, they have been coming in large numbers, and less than thirty-five per cent. can read when they come, and they never learn, their sole ambition being the accumulation of from $200 to $1,000 to take back to Hungary. The average Hungarian at home, when he can find work, will earn about six guldens a month. A gulden is equal to forty cents in American money, and it requires but seventy-two guldens for a Hungarian to live a whole year in Hungary better than he does in America, that is, $28 80. In this country, whether they have been brought over by contract (a few of them have, the majority having immigrated on their own account) or not, they soon find employment on public works, at the mines, in iron and steel works, on railroads, &c., and are willing to work for sums much lower than the minimum paid to our own laborers. Few of them become miners, most working at outside and inside laboring, and picking slate. A full-grown man will work for a boy's wages. At the coke ovens they will contract to draw and fork coke for less than other laborers, and will put all hands, including their women and children, to work, so as to complete the work soon. Living as they do, like animals, ten, twenty, and thirty in a hovel, with one woman to cook for each gang, they accomplish their purpose of saving money rapidly. They seem to have no preference for the kind of work, and are to be found in the iron and coke districts, and at the anthracite and bituminous mines. Few live in the cities. Not fleeing from military duty, the average of their ages when they come here is thirty years; some as young as twenty-five years, and few older than thirty-five. At home they live better than they do here, one family to a house. They bring nothing of value with them, their intention being not to remain.

Their diet is the poorest salt meat, potatoes, and a poor kind of bread which they bake themselves. Liquor is their delight, but they will only indulge in the cheapest beer and whisky, the latter being more often substituted by common alcohol diluted with water. They spend nothing of their earnings for anything except board and rum; generally, they go back in the same clothes they came. A week's earnings of five or six dollars supplies their living for a month, and if at any time it should cost them a little more, they change boarding-houses under the belief that they are being cheated. Like the Poles, their perceptive faculties are quick, and they will learn to do common work quickly, but they do not improve their conditions like the Poles and seldom accumulate property. In a population of two thousand Hungarians, in one section, in the anthracite coal region, but one was a citizen. To save money they will live like pigs, to the sacrifice of health and comfort, and to the great discomfort and danger of the communities in which they reside, from pestilence-breeding causes. It is truly astonishing that, in a civilized country, people are permitted to live like the Hungarians live in the mining regions of Pennsylvania. They have been known to gather the offal about slaughter-houses to make soup with. One dollar a week is about the highest sum the most liberal Hungarian allows himself to live on. Their habitations are sheds, situated generally in the poorest quarters of the towns. They have wooden beds, or bunks, with straw to lie on, and the floors reek in filth. In the cold weather they keep warm by huddling close together, and the atmosphere of their huts or hovels is stifling.

Their savings range from two hundred to one thousand guldens, $80 to $400, and their earnings are from $2 50 to $8 per week. It takes them from one to three years to save all they want; but in this respect they differ, some being satisfied with less than others. During the past three years, about fifty have left the anthracite coal regions with one thousand guldens each. They do not keep their savings about their persons or hovels, but as fast as it accumulates they send it to their friends in Hungary by foreign money-order, purchased of local agents, or by bank draft, or bill of exchange. It is estimated that, in the past three years, $600,000 have been sent from the Schuylkill coal region to Poland and Hungary.

Having returned to his native country, the Hungarian proceeds to invest his savings. He will loan his money, or buy land and farm it. Usually he loans it, and in a few years doubles it. For security, he will take a piece of land, cultivate it, and live off the products for the interest. One hundred guldens frequently command sixteen guldens yearly interest, money is so scarce in Hungary.

This inquiry has been made, and the impressions and facts gathered, so far as the reference is made to the employment, wages, and modes of life of the laborers in this State, by visits to the sections in which they live, including the cities, agricultural country, where railroad work is being done, the anthracite and bituminous coal regions, and the coke region

about Connellsville, and other places. It should be stated that these visits and pertinent inquiries made have established the fact, so far as the Hungarians are concerned, that, while their mode of living is the same everywhere in the State, it is in the coke region where they are seen in the worst phases of life, and where they work for less and do more menial labor than in other localities.

The means employed by steamship and other companies or individuals to induce immigration, and the cost to each immigrant, is the closing point in our inquiry. As a matter of business, the trans-Atlantic steamship companies have done everything in their power to induce foreigners to come to America. The great prosperity of the United States, our resources and wealth, our institutions, freedom, and liberality, have been pictured in glowing terms, and find willing ears among the poor and down-trodden of other countries. There, as here, the steamship companies have agents in every hamlet, town, and city, and the business of immigrant traffic has prospered immensely. Competition is great, and steerage passage from European ports has been reduced as low as thirteen dollars. Few immigrants pay less, and many have paid as high as thirty dollars. The majority of Poles and Hungarians have come here voluntarily, but the greater part of the Italians who have reached here since 1881 have been brought under contract. A railroad contractor will say to the man who goes abroad, "I want so many men." In a specified time, a horde of mendicants from Italy reach New York, and are forwarded to Pennsylvania. Their passage is paid by the man having them in charge, but they are made to work it out before they quit the service of their first employer. It cannot be charged that the steamship companies, as a rule, engage in importing contract labor as a business. They are part of the means employed; but back of them are individuals who have made it a lucrative business for years, and still engage in it in open defiance of law.

From all that has been herein stated, it would almost seem a parody to write about the evil effects of the importation of immigrant labor, they are so plain. We can but repeat in general terms that these immigrants supplant our own people in all inferior grades of work, the tendency of their employment is to degrade labor, their importation is grossly unjust to our own working people and tends to lower the moral and social conditions of the working class.

For these reasons, we believe the law already in force prohibiting the importation of contract labor should receive a strict enforcement, and that such legislation should be enacted that, if not prohibiting the immigration of paupers altogether, would at least throw around it such safeguards as would admit none but those who come to stay and whose moral and social characters will be improved by a residence here.

LABOR TROUBLES IN PENNSYLVANIA.

Many differences have occurred in the past year between employers and employed in Pennsylvania. Strikes and lock-outs occurred in the textile industries of Philadelphia, some of which are still unsettled. The year was one of general depression, and, in consequence thereof, wages were lowered in many industries. In the attempt to reduce wages the employers were met by a determined resistance on the part of their employés, causing loss of time and money with little advantage to either party.

The troubles in the bituminous coal fields were in effect a continuation of the troubles of previous years, and as those troubles are of continuous recurrence, we give a synopsis of the affair, in order that the condition of the coal operator and employé may be better understood.

The troubles in the textile industries, owing to their present unsettled condition, will present matter for the next report.

Mining Troubles in the Fourth Bituminous District.

In reference to the troubles which existed in the Fourth bituminous district, the following information was sent to the bureau:

"At Hardscrable mine, in Clarion county, operated by the Brady's Bend Coal Company, on the 23d of April, 1884, the miners called a meeting to elect a check-weighman, and put him on the tipple to see that justice was done them in the weighing of their coal. This the company absolutely refused to agree to. A lock-out was the result, causing nearly three months' suspension, and the end was, that through sheer starvation the miners had to succumb and return to work, without having accomplished their purpose. Another cause of dissatisfaction was the putting in of a larger screen by the company, which was equal to ten cents' reduction on each of the miners' wages, and this had also to be submitted to.

"At Pine Run mine, East Brady, Clarion county, the miners were notified that on and after the 1st of April, 1884, their wages would be reduced ten cents on the ton. To this the miners excepted, but went to work until the 8th of May. At that time one week's notice was given the operators that the miners wanted a restoration of the ten cents. This was not agreed to by the operators, nor would they submit to arbitration, when a strike took place, which lasted two months, resulting in the miners having to go to work again for sixty cents a ton screened coal, instead of seventy cents, the amount received prior to the 1st of April. In addition to this, the miners had to sign an article of agreement not to strike in the future, not to belong to any labor organization, nor assist miners on strike. The

Hardscrable miners had also to agree to the same thing, after two hundred and seventy-five of them had been idle for nearly three months.

"Dagus mines, located in Elk county, operated by the North-western Mining and Exchange Company, on the 27th of April, 1884, wanted to reduce the miners ten cents on the ton, or from sixty-one to fifty-one cents. The company insisted on the ten-cent reduction. An arbitration was called for by the miners, and the company chose three arbitrators and the miners three. Neither party would come to terms; a strike took place, which lasted a month, and ended in the miners returning to work upon the company's terms.

"The miners of Eureka slope also struck in May, but as they were governed by the action of the miners of Dagus mines, a similar state of affairs was the result.

"Falls Creek mine, near DuBois, Clearfield county, operated by the Falls Creek Coal Company. The miners were receiving forty cents per ton net run of the mines. On the 17th of April, 1884, the company stopped work and put in a screen. Screened coal was then required of the miners, which they refused to agree to. Arbitration was called for by the miners, to which the company would not consent, and a lock-out was the result. Eighty men were idle from the 17th of April until the 1st of July, when the company called the men together, and gave them the old price, forty cents per ton net run of the mines, with the other privileges as before.

"Tyler Station mine, located on the low-grade division of the Allegheny Valley railroad, in Clearfield county, operated by the Clearfield Coal Company. The miners were getting fifty cents per ton run of the mines, when, on the 1st of April, 1884, they were reduced five cents, which was refused by them. A strike of two weeks took place, at the end of which the men went to work at the reduction. All the coal mined at this place is coked."

The Strike in the Fourth Pool.

From a trustworthy representative of the miners, the Bureau has obtained the following account of the strike from its incipiency to its close, with other interesting information, in the fourth pool of the Monongahela district.

"When the miners and operators of the fourth pool agreed to arbitrate their disputes in the fall of 1883, instead of resorting to a strike, each party solemnly pledged themselves to abide by the decision of the umpire. The award was to take effect from the 23d of November, 1883. Mr. Weeks, the umpire, gave his decision on the 22d of December following, and it was in favor of the miners. At that time work was suspended on account of floating ice in the river. Only four firms in the pool paid the back money coming to the miners by the award, the others positively refusing to abide by the agreement. The river closed finally on the 5th of January, 1884, and remained so until the 31st of January, when it broke up, the ice ran out, and navigation was resumed.

"F. J. Wood started his works and paid the award of the umpire. The other operators in the pool refused to pay, and consequently the miners inaugurated a strike in the pool for the enforcement of the award. In the meantime, J. S. Neel's two mines, together with the Empire and Knob mines, went to work without the award of the umpire. On the 20th of February the operators notified the miners that they were ready to start and would pay the umpire's award. The majority of the miners started to work on the morning of the 21st. The Empire mine paid the price, and the Knob and J. S. Neel refused. The working miners then held a meeting, and resolved to establish a camp at the mines of J. S. Neel, in order to make a uniform price in the pool.

"The *modus operandi* of camping is as follows: Each of the working miners selects a representative, generally one of their best talkers, each mine paying its own delegate. A piece of land is rented, as near the intended field of operations as possible, on which the tents are pitched. These are of canvas. The camp is then organized, the coolest-headed man is selected for president, and the work is begun. Whenever an opportunity presents itself, it is used in trying to persuade those working under price to come out. Every lawful means is used to make the price uniform.

"They were partially successful at one of the Neel mines, getting the miners to come out, and they got the price. At the other mine of J. S. Neel, they refused to come out and make the demand for the price. Persuasion and eloquence appear to have been at a discount on these miners, consequently some of the campers got impatient, (they had been there for nearly a month,) and purchased three or four tin horns, such as are generally used by butchers, and these they tooted at the heels of the Neel miners in going to and from their work. Neel had warrants issued for the arrest of the campers. Four were arrested, the others fled, and that broke up the camp. The four miners arrested had a hearing, and were admitted to bail, each man being placed under $500 bonds for his appearance at court. They were tried in June in the Washington county court, and convicted under the conspiracy laws. They were sentenced to pay a fine of six cents each and the costs of prosecution. The court stated that the charge being but nominal, there was no disposition to impose a severe sentence. The fine and costs were promptly paid and the men released.

"When the spring run of 1884 was ready to start, the operators of pool No. 3 notified their miners that they wanted their coal dug for twenty-five cents per 100 bushels less than Nos. 1 and 2 pools, giving several reasons for the demand. The miners replied that they had always paid the same price as Nos. 1 and 2, and they did not see any reason for a change now, but, sooner than have a strike, they would leave the matter to a board of arbitration, and pledge themselves to abide by its decision. The operators refused to arbitrate. A strike followed, which did not last long, the miners being starved into submission. That made the price in Nos. 1 and 2 $3 50 per 100 bushels; in No. 3, $3 25, and in No. 4, 3 cents per bushel.

"It was but a short time until the operators of Nos. 1 and 2 notified their miners that they wanted their coal dug on the same terms as pool No. 3, which resulted in a mass meeting being held at Union Grove in the second pool, on the 21st of March, at which were present over 3,000 miners. It was resolved to go to work at the same price as No. 3, viz: $3 25. This brought pool No. 4 down to $2 75. Then followed another cut of twenty-five cents in pool No. 3, making the price there three cents per bushel. This reduced No. 4 to $2 50. Then came a demand for another reduction in Nos. 1 and 2, although it was not general at this time. Some of the larger operators said the run was so nearly over that they would finish at the price then working at, but when the fall trade opened the same terms as in pool No. 3 would be demanded. Some of the miners of pools 1 and 2 expressed a determination to keep following the third-pool miners until they got down to nothing.

"In order to stop this cut-throat warfare, a convention was called at Monongahela City on the 10th of June, at which a resolution was passed demanding a restoration of the three-and-a-half-cent basis, the price paid when the spring run started, and that, if the operators did not concede the demand, all mining of coal on the Monongahela river was to stop on the 17th, seven days later. The operators did not concede the demand, and the miners that were working, with a few exceptions, stopped as per order. The majority of the mines had shut down before that time, this being the slack season on the river. I would not call it a strike, being more of a suspension to let the demand catch up to the supply, being as much to the interest of the operators as the miners. The number of idle men in the different pools was estimated to be as follows: First pool, 500; second, 1,000; third, 900; fourth, 800.

"The coal trade of the Monongahela river is at present confined to pools Nos. 1, 2, 3, and 4. The locks are operated and owned by the Monongahela Navigation Company. Its charges on 1,000 bushels of coal are as follows: Lock No. 1, ninety cents; No. 2, ninety cents; No. 3, sixty-five cents; No. 4, twenty cents; total, $2 65. The coal works are all located between Pittsburgh and Brownsville. The distance between the two points is fifty miles, so that it costs, just for the matter of lockage alone, from pool No. 4 to the city of Pittsburgh the sum of $2 65.

"A few years ago the Monongahela river coal had the entire market from Pittsburgh to New Orleans. Such is not the case now, our principal competitor being the Kanawha coal fields of West Virginia. The Kanawha river is the principal stream in that State. It was originally a worthless stream for navigation purposes, abounding with rocks and subject to sudden freshets, but running through a rich coal country. By large appropriations annually inserted in every river and harbor bill, it has now six locks and dams completed and a site bought for a seventh dam and ready to begin operations upon. Four of the six are movable dams, and by their use the coal men of the Kanawha were able to make their runs of

coal last year to market, while the Pittsburgh coal men were not able to move a boat.

"By a clause in the river and harbor bill of 1882, no toll can be collected on the Kanawha river, but all coal passes out free. Thus the coal men of West Virginia not only have the advantage of being two hundred and forty miles nearer to market, but have constant boating water all summer, and can give their miners steady employment all the year round, because they have no tolls to pay; while the Monangahela operators have to pay almost one cent toll per bushel on their coal before they get to Pittsburgh, and then have two hundred and fifty miles of the most dangerous navigation on the Ohio river before they get an even start with the coal men of the Kanawha. This great loss falls heavily upon operators and miners, but mainly on the miners. It is a great loss to our whole community to have so much business taken away from us, but it falls heaviest on the miner, because the shippers, coming into competition with the coal men of the Kanawha, can get but a fraction more for their coal than the latter, while their coal costs them (counting tolls on the Monongahela, delays on account of water, wrecks and longer trips of tow-boats) not less than two cents a bushel more than shippers from the Kanawha. This loss falls mainly on the coal-diggers of the Monongahela valley, because tolls must be paid, wrecks provided for, and expenses for tow-boats from Kanawha and back liquidated. Then, if the digger likes, he may dig coal for whatever is left, or let it alone. It would be the proper thing for the Government to buy out the Navigation Company, and give us free navigation on the Monongahela river.

"There are but three operators in the fourth pool who ship their own coal to the lower markets; the others are dependent on the big operators of the lower pools for their loading. Heretofore, the Pittsburgh flat trade, which was immense, belonged exclusively to the fourth pool. Now, instead of using the 'dusky diamond' in the many mills and factories of the Smokey City, natural gas is being used in the majority, with the prospect of being used not only in the industrial establishments, but for household purposes before another year rolls around."

The above information was sent to the Bureau on the 19th of July. Under date of August 17, the following was transmitted:

"The week just closed has been an exciting one in the fourth pool. We have in this pool now five so-called coöperative pits, and, with Neel's two mines, making seven mines which refused to stop when the strike was ordered on the 17th of June. These seven mines kept on working at whatever price they could get. Every effort by the miners of the fourth pool to get them to come out was unsuccessful, so, on the 28th of July, the other mines in the pool started up on the best terms they could get. The lower pools were still out for the advance, and accordingly, on the 7th of August, a mass-meeting of the three lower pools was held at Union Grove, near Elizabeth, in the second pool, for the purpose of getting the fourth pool to come out and unite in a general strike.

"At this meeting it was resolved to come to the fourth pool in a body, and form a camp, with the avowed object of getting this pool into line. The miners came up per steamer Gumbert on the following Monday, shortly after dark, three hundred and thirteen of them, making their head-quarters at Wood's Run, about the center of the pool. There was not, as reported, pistol-shooting nor striking people over the heads with oars. So far, everything has been conducted in the best of order. No one under the influence of liquor is allowed around the camp, which is governed so strictly that not an apple is permitted to be taken from a tree. I believe the expedition will be a failure.

"There is a bad feeling in this pool. Some persons have made private contracts to get all the work that is going, caring nothing for check-weighmen or the welfare of their neighbors. For my last year's work in the mine, I earned the munificent sum of $361. The prospects for the second year are worse. In order to get some reading matter, I was forced to give up the use of tobacco, after using it for twenty years. I always have had about an acre of ground planted in garden truck, and raising enough corn to fatten a couple of hogs. This year my patch has been ruined by thieves, the potatoes were pulled up before they had matured, and everything else trampled under foot. It was not our visitors that did it, but resident thieves.

"The daily consumption of coal in Pittsburgh amounted to 188,900 bushels per day, being over 47,000,000 a year, giving employment to 1,600 miners alone, without counting other labor employed. It appears to me there is no question but that natural gas will ultimately take the place of coal, and while we might try to compete with the gas at present and be successful by coming down to starvation prices, it will be impossible in the course of time."

Under date of September 1, 1884, the following was sent:

"Neel's men still continue to work. They are taken to the mines guarded by constables. There are seventy-four miners in the Washington county jail at present. No arrests have been made since the last unfortunates came from below, Sheriff Chambers having sent word to make no more wholesale arrests. The object of the miners appears to have been to bring, if possible, the conspiracy laws of the State into disrepute. I do not know what the outcome of this struggle will be. I often visit the camp, which is about a mile above Allenport, Washington county.

"The river is very low at present, so low that hardly anything could be done even without the existing troubles. When water comes and the fall trade is ready to start, I think the miners of this valley ought to go to work at the present rates, because it would not be policy to continue the struggle when business all over the country is so depressed. If the miners should carry the day and get the advance asked for, the 'carpet-baggers' would flock here from Maine to California, the river would be so crowded that the advance, instead of being a benefit, would, in my opinion, prove an injury to the resident miners of the valley."

On the 23d of November the final letter was sent. After speaking of the termination of the great union strike, and the disposal of the cases of the miners arrested on complaint of Mr. Neel, eleven of whom laid in jail all summer, the rest being out on bail, the writer gives this recapitulation:

"Came out on the 17th of June for three and a half cents per bushel, being an advance of one cent. There were seven to nine miners in this pool (the fourth) who worked on, refusing to come out.

"After the strike had been in progress for six or eight weeks, the Coal Exchange passed a resolution to the effect that in the fall it would pay only two and a half cents in the lower pools and two cents in the fourth.

"On the 1st of October the fourth pool miners all went to work at the reduced rates, two cents per bushel. They had only been at work one week when Lock No. 4 closed for repairs, stopping navigation. The lock was shut until the 8th of November, when it was opened and navigation again resumed.

"The miners are all at work now at the reduced rates. It was the expectation that long ere this we would have had a rise in the river, and then be able to get back the half cent lost by the strike. The elements, however, were not in our favor, and that rise in the river has not yet come.

"The condition of the river miners is pitiable indeed. After being out all summer, and no water coming to help them out this fall, they are, in the face of the coming winter, forced to go to work upon the operators' terms, and they are not easy terms. The reduction to two cents per bushel is not all of this unfortunate struggle by any means."

The trouble in the Fifth judicial district—the county of Allegheny—which had caused much of idleness and dissension in 1884, was finally left to the umpirage and decision of Mr. Joseph D. Weeks. His decision was given on February 11, 1885, and is here presented in full:

Award in the matters submitted to the umpirage and decision of Joseph D. Weeks, umpire of the railroad coal trade tribunal of the Fifth judicial district of Pennsylvania, by resolution of the tribunal, January 27, 1885, and heard February 2, 1885.

I, Joseph D. Weeks, umpire of the railroad coal trade tribunal of the Fifth judical district of Pennsylvania, having been duly sworn, and having heard the parties and their proofs and arguments bearing upon the questions submitted for my decision and umpirage, as per resolution of the tribunal, dated January 27, 1885, herewith attached and marked Exhibit A, have decided, and do hereby decide, as follows:

Two questions are submitted to the umpire for his decision and award—

First. The formation of a sliding scale of wages to be paid for mining coal, said scale to be based upon the selling price of coal, per 100 bushels, on the wall at Pittsburgh.

Second. The ascertainment of the present selling price of coal on the wall.

The highest and lowest selling prices for which rates of mining were to be paid are the same in both the scales laid before the umpire in the articles of submission, $4 00 per 100 bushels being the lowest, and $7 75 the highest. Both these scales also agreed in requiring a change in the wages of mining for every 25 cents' advance or decline in the selling price of coal per 100 bushels. These points in the scale, therefore, required no decision from the umpire.

The chief difficulties before the umpire in arranging the wages column in the scale were two:

First. To find a rate of wages corresponding to some one of the selling prices fixed in the scale which would appear to be fair and just to both operator and miner, and that might be taken as the initial point in the scale of wages.

Second. To determine a ratio of advance or decline in wages from the initial rate so found.

The written arguments presented to the umpire by both the miners' and operators' representatives are based upon the report of a joint committee of miners and operators, two of each, appointed in 1883, to gather statistics as to the selling price of coal and the wages paid for mining for the years 1881, 1882, and part of 1883. In their written arguments the miners' representatives distinctly state that they "base their scale" and "rest their claim" upon the report of this committee. The operators' representatives, "to assist" me "in arranging a scale," call my attention to certain facts and figures from the same report. I am justified, therefore, in assuming that the actual results of the investigations of this committee as given in their report, being the basis of the arguments of both parties to this arbitration, are fairly satisfactory to both, and will furnish a fair and just starting-point in the wages column of the scale.

From the original report, signed by the entire committee, which is in my possession, I find the average selling price of coal on the wall during the time covered by the report to be $6 45 per 100 bushels, and the the average wages during the same period to be $3 56, not $4 00, as given in the miners' argument. When $4 00 was the average price for mining, the average selling prices, as shown by the report, were $7 25 and $7 50, Now $3 56, the average wages, is about $55\frac{1}{4}$ per cent. of $6 45, the average selling price; or $55\frac{1}{4}$ per cent. of $6 50, the nearest price in the scale to $6 45, is $3 60, and this is taken as the starting-point of the wages column, or, in other words, the initial point of the scale is—

When lump coal sells on the wall at $6 50 per 100 bushels, the price of mining shall be $55\frac{1}{4}$ per cent. of this selling price, or $3 60 per 100 bushels. (Note: $55\frac{1}{4}$ per cent. of $6 50 is $3 59\frac{1}{8}$, but it is advisable to ignore fractions.)

In meeting the second difficulty—to determine the ratio of advance or decline from this initial point—a rate of wages corresponding to some

selling price other than the $6 45 or $6 50 was sought. Since the formation of the trade tribunal of 1883, there have been three wages determinations which have been accepted, and under which there has been industrial peace in the district. The last of these, that of April, 1884, was reached by mutual agreement without calling upon the umpire. This agreement was based upon the $5 75 selling price, 52 per cent., or $3 00 being agreed upon as wages. This being the result of an amicable settlement, may, in fairness I think, be taken as the second point of the scale. Between the two rates, $5 75 and $6 50, in the selling price column, the advance in rates of mining is 60 cents, or 20 cents' advance in mining with each 25 cents' advance in price. This gives the ratio of advance in price of mining, at least from $5 75 upward.

I do not think it is necessary to explain further the method upon which the scale is constructed, except to state that as both scales recognize the claim of the operators, that, as the selling price decreased, the ratio of wages to selling price should not be as large, the scale has been so arranged. From $4 00 to 5 00 for every 25 cents' advance in selling price wages increase 12 or 13 cents; from $5 00 to $5 50, 15 cents; and from $5 50 to $7 75 the increase is 20 cents, the same as between the two determining points of the scale.

I therefore award and determine that the following shall be the sliding scale of the railroad coal trade tribunal of the Fifth judicial district of Pennsylvania:

When lump coal sells on the wall at, as below, per 100 bushels,	*The price to be paid for mining coal, per 100 bushels, run over a 1½-inch screen shall be,*
$4 00	$2 00
4 25	2 13
4 50	2 25
4 75	2 37
5 00	2 50
5 25	2 65
5 50	2 80
5 75	3 00
6 00	3 20
6 25	3 40
6 50	3 60
6 75	3 80
7 00	4 00
7 25	4 20
7 50	4 40
7 75	4 60

Regarding the suggestion in the argument of the miners' representatives that the scale be based upon the selling price of the "run of the mine" instead of "screened coal," I would say that there was no evidence in the articles of submission that this question had been referred to my decision

by the "whole of the members of the tribunal," as required by the "voluntary trade tribunal act," consequently I could not consider it.

The second point submitted to the umpire for his award was the ascertainment of the selling price of coal on the wall. From an examination of the books of certain operators and their statements under oath, I find that the average selling price of coal on the wall is $5 00 per 100 bushels.

Under the terms of submission, I therefore decide and award that from February 1, 1885, the price of mining 100 bushels of coal, of 76 pounds each, run over 1½-inch screen, shall be $2 50, the wages attached in the scale to the $5 00 selling price.

I deem it necessary to state that this award is made with full reference to a resolution of the tribunal, adopted unanimously January 13, 1885, and which was read in evidence before the umpire, as follows:

"*Resolved*, That it is the sense of this tribunal that such prices for mining coal should be made from time to time as will enable the operators governed by the awards of this tribunal to successfully compete with other operators furnishing coal for the same markets."

In view of the fact that the scale is based on the selling price of coal on the wall, I would suggest that some method be agreed upon by the tribunal for ascertaining this selling price at stated intervals.

Joseph D. Weeks,
Umpire.

Pittsburgh, *February 11, 1885.*

ANTHRACITE COAL.

Table showing the number of collieries, number of employés, &c., in the Anthracite mines of Pennsylvania, compiled from returns made to this Bureau, for the year ending December 31, 1884.

COUNTY.	Number of collieries.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of tons of coal mined.
Schuylkill region:					
Columbia,	8	170	2,180	$694,799	673,099
Dauphin,	3	267	1,909	591,571	552,409
Northumberland,	27	197	7,199	2 651,079	2,098,712
Schuylkill, part of,	82	186	19,099	6,981,812	5,628,904
Total for region, 1884,	120	190	30,387	$10,919,261	8,953,124
Lehigh region:					
Parts of Carbon, Luzerne, and Schuylkill counties,					
Total for region, 1884,	52	173	13,956	$5,159,924	4,154,262
Wyoming region:					
Lackawanna, and part of Luzerne county.					
Total for region, 1884,	109	185	38,973	$13,827,077	12,544,298
Grand total, 1884,	281	185	83,316	$29,906,262	25,651,664
Grand total, 1883,	310	221	87,308	33,597,253	30,154,546
Decrease since 1883,	29	36	3,992	$3,691,991	4,502,882

The above report was obtained from all the operators reporting in 1883, together with some who had not reported before. The decrease since 1883 can be accounted for by depression in trade, and by sales of collieries formerly owned by individuals to large companies. Some of them were shut down to restrict production. We have given the returns by counties whenever practicable. In the Lehigh and Wyoming regions the returns were of such a nature that it was not practicable to tabulate by counties. To the above total of coal mined, there should be added 6 per cent., for coal consumed or sold at collieries.

BITUMINOUS COAL AND COKE.

Table showing the number of mines in operation, production, &c., in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.

COUNTY.	Number of mines.	Average number of days operated.	Number of persons employed.	Amount paid in wages.	Number of tons of coal mined.	Number of tons of coke produced.	Number of coke ovens.
Allegheny,	64	157	9,228	$2,933,391	2,863,631	4,745	112
Armstrong,	4	256	343	112,822	170,826	16,153	66
Beaver,	6	159	535	167,794	156,695	478	6
Bedford,	3	164	218	56,021	69,770	31,864	88
Blair,	6	274	487	172,723	208,541	45,709	101
Bradford,	3	232	610	305,895	313,575		
Butler,	5	179	339	117,090	151,335	11,000	50
Cambria,	18	242	1,141	808,323	659,843	7,234	71
Cameron,	1	217	100	18,729	13,652		20
Centre,	6	228	780	124,142	216,422	22,458	65
Clarion,	9	188	747	649,059	329,973	10,478	70
Clearfield,	39	183	3,742	1,105,123	2,177,543	13,500	56
Elk,	6	253	785	388,998	413,243		12
Fayette,	64	235	6,047	2,584,063	4,041,643	2,973,718	6,299
Huntingdon,	8	224	451	164,469	212,527	61,921	231
Jefferson,	6	216	381	264,877	450,079	54,666	123
Indiana,	1	306	62	24,148	30,758		
Lawrence,	4	128	192	37,382	42,818		
McKean,	3	202	147	75,348	78,870		
Mercer,	13	160	882	293,749	276,350		
Somerset,	13	212	359	122,086	269,930	11,055	32
Tioga,	6	171	2,386	887,366	931,922	25,601	200
Venango,	1	300	34	15,825	15,000		
Washington,	26	186	2,499	702,253	707,262	7,000	32
Westmoreland,	46	244	5,911	2,581,095	3,282,733	705,760	3,308
Total for 1884,	361	213	38,906	$14,752,786	18,084,941	4,003,344	10,942
Total for 1883,	381	207	45,454	17,014,624	18,729,817	3,380,872	10,617
Increase over 1883,						622,472	325
Decrease over 1883,	20	6	5,548	$2,261,838	644,876		

The above table does not include 920 idle coke ovens reported. If we include idle coke ovens, the coke regions of Fayette and Westmoreland counties would have 10,336 reported.

IRON AND ITS PRODUCTS.

THE MANUFACTURE OF STEEL IN PENNSYLVANIA.

By JAMES M. SWANK, *Vice President of American Iron and Steel Ass'n.*

The State which was founded by William Penn, only a little more than two centuries ago, and which has to-day a population of more than five millions of people, has long been foremost among all the States as a producer of iron and steel, and of anthracite and bituminous coal, and it has recently become noted for its almost complete monopoly of the production of petroleum and natural gas, while as a producer of textile fabrics, glass, lumber, leather, and agricultural staples it has always been in the front rank, if not always foremost. But of all the industries here named, and of others less prominent that might be mentioned, none has made such marvelous progress in recent years—none has so greatly added to the wealth of the State—as the manufacture of steel. Before giving the figures which will show the magnitude of this domestic industry, a brief reference to the history of the industry in all countries and to the leading facts in its development in Pennsylvania will interest the general reader.

Steel has been made from the earliest times in the world's history and by various processes. The most notable of the early, or primitive, processes was that which was in use by the Hindoos and Persians, and probably by other Asiatic nations, and which consisted in melting small pieces of wrought-iron with charcoal in crucibles, the product being known as wootz or Indian steel. Subsequently, we read of steel being manufactured in Catalan forges in Spain and elsewhere in Southern Europe, which forges were constructed and operated very much after the manner of an ordinary blacksmith's fire, but having a sunken hearth or crucible. In this crucible steel was directly produced from iron ore, which was smelted with charcoal. Steel is still made in Catalan forges in some parts of Austria and in a few other localities, pig-iron, however, being substituted for iron ore. About the close of the Middle Ages the manufacture of steel by cementation was invented in Germany, and that country, France, England, and other countries were soon engaged in producing steel by this process, which is still in use, although overshadowed by more modern processes. By this process bars of wrought-iron are placed in large furnaces in combination with fine charcoal and subjected to a high heat, in which the iron absorbs the carbon in the charcoal, while at the same time its fibrous structure is changed to one that is granular. The product of the cementation furnace is known as blister and shear steel. About the middle of the last century, Benjamin Huntsman, an Englishman, invented the modern process of manufacturing steel in crucibles, and this process has ever since continued in use for the production of all the finer qualities of steel. No other methods of produc-

ing steel gained any prominence until the invention of the Bessemer process, in the decade between 1850 and 1860, and the perfection of the open-hearth process, in the decade between 1860 and 1870. By these two inventions of yesterday fully nineteen twentieths of all the steel that is now produced in the world is made, and it is to these processes that Pennsylvania owes its present exceptional prominence in the manufacture of steel.

The first suggestion of the manufacture of steel in the American colonies appears to have been made in 1655, when John Tucker, of Southold, on Long Island, informed the General Court of New Haven "of his abilitie and intendment to make steel there or in some other plantation in the jurisdiction, if he may have some things granted he therein propounds." Special privileges were granted to the petitioner, but it is not known whether he ever made any steel or not; probably not. In 1728, Samuel Higley, of Simsbury, Connecticut, claimed that he had, "with great pains and cost, found out and obtained a curious art by which to convert, change, or transmute common iron into good steel, sufficient for any use, and was the very first that ever performed such an operation in America." A patent was granted to him and Joseph Dewey as partners in the manufacture of steel, but they do not seem to have been successful in placing their enterprise on a firm foundation. The certificate of two blacksmiths, however, Timothy Phelps and John Drake, declared that in 1725 Samuel Higley had made "good steel" from wrought-iron which they had supplied to him, and which steel, they further certified, was "the first steel that ever was made in this country that ever we saw or heard of." Between 1742 and 1744, the manufacture of steel was successfully established at Simsbury, and very soon afterwards we hear of this industry at other places in Connecticut and in other colonies. In 1750, Massachusetts had one steel furnace, and New Jersey had one. In 1747, Stephen Paschal built a steel furnace on the north-west corner of Eighth and Walnut streets, Philadelphia, and in 1750 William Branson owned a steel furnace in Philadelphia and another on French creek, in Chester county, Pennsylvania, known as Vincent steel works; the last named was, however, not in use at this time. Peter Townsend, at the Sterling iron works in New York, is said to have produced in 1776 the first steel made in that State. Steel was made in nearly all of the colonies during the Revolution.

In 1770, Whitehead Humphreys was the proprietor of a steel furnace on Seventh street, in Philadelphia, and at this furnace he made steel for the Continental army during the Revolution, using iron from Andover, in New Jersey, by special direction of Congress, as the iron made at the Andover works was the only iron which would "with certainty answer the purpose of making steel." In 1786, the General Assembly of Pennsylvania loaned £300 to Mr. Humphreys for five years to enable him to make steel from bar-iron "as good as in England."

In 1787, General Washington visited the steel furnace in Philadelphia which had been built by Stephen Paschal, but was then owned by Nancarrow & Matlock, and was said to be "the largest and best in America."

In 1791, Alexander Hamilton stated in his celebrated report on American manufactures that "steel is a branch which has already made a considerable progress, and it is ascertained that some new enterprises on a more extensive scale have been lately set on foot." In the same year, Tench Coxe stated that "about one half of the steel consumed in the United States is home-made." In 1810, the whole country, however, produced only nine hundred and seventeen tons of steel, of which Pennsylvania produced five hundred and thirty-one tons in five furnaces. In 1813, Tuper & McKowan operated a steel furnace at Pittsburgh, which was the first in that city. In this year, Tench Coxe declared that the manufacture of "common steel, iron wire, and edge tools" had greatly advanced in the United States since 1810.

Until about the beginning of the present century no attempt appears to have been made in this country to manufacture steel by Benjamin Huntsman's crucible process. The first attempts were failures. Down to this period, and for some years afterwards, all the steel made in the United States was blister-steel, except a very small quantity which was made from pig-iron in the Catalan forge. In 1818, crucible steel of fair quality was made at Valley Forge, in Pennsylvania, and used in the manufacture of saw-plates; but its production at this place soon came to an end. In 1831, we were still making only blister-steel; but in 1832, Dr. William Garrard, who is yet living at Fallston, in Beaver county, Pennsylvania, was successful in making crucible steel of the best quality at his works, which were built in that year at Cincinnati. About the same time numerous other attempts were made to produce crucible steel in this country, but these were all failures. In 1849 cast-steel of good quality was made in crucibles by the Adirondack Iron and Steel Company, at Jersey City, New Jersey. Soon afterwards good steel was made in the same manner at Pittsburgh; but it was not until 1860 that the manufacture of crucible steel of the best quality as a uniform product was established in this country on a successful commercial basis. The honor of having achieved this result belongs to the firm of Hussey, Wells & Co., of Pittsburgh. In 1862 the firm of Park, Brother & Co., also of Pittsburgh, accomplished the same result. Both firms used only American iron. Thenceforward, through the encouragement afforded by protective duties, the manufacture of crucible steel in this country was established on a firm foundation, and extended to many States. But Pennsylvania has been the principal producer of crucible steel, and also of blister-steel. Before we began to manufacture Bessemer steel and open-hearth steel its position as the leading steel-producing State was well established.

In the latter part of 1864, the first Bessemer steel was made in this country at experimental steel-works established at Wyandotte, Michigan, by the Kelly Process Company, of which three Pennsylvanians, William M. Lyon, Daniel J. Morrell, and James Park, jr., were prominent members. The company took its name from William Kelly, an ironmaster of Eddyville, Kentucky, but a native of Pittsburgh, Pennsylvania, whose claim of priority as the inventor of the pneumatic, or Bessemer, process of manufac-

turing steel was conceded by the United States Commissioner of Patents after Mr. Bessemer's invention had been patented in this country but before it had been even experimented with by our iron or steel manufacturers. The owners of Mr. Bessemer's American patents established an experimental steel-works at Troy, New York, at which they succeeded in making Bessemer steel early in 1865. The controversy which resulted between the Kelly Process Company, which controlled Mr. Kelly's patents, and the owners of Mr. Bessemer's American patents prevented the manufacture of Bessemer steel in this country as a commercial product until 1867, in which year the Pennsylvania Steel Company, at its works near Harrisburg, made its first Bessemer steel. Thenceforward the Bessemer-steel industry made steady progress in this country, but Pennsylvania has led all her sister States in recognizing its importance and in risking her capital in its development.

The open-hearth steel industry in this country had its beginning in 1868, when the first American open-hearth furnace was built at Trenton, New Jersey, by Frederick J. Slade, for the firm of Cooper, Hewitt & Co. No substantial progress, however, was made in this country in the manufacture of open-hearth steel until after 1870. But the open-hearth process could not have been make a success in this country, or any other country, if the Siemens regenerative gas furnace had not been applied to the production of the intense heat which it requires. The first Siemens gas furnace introduced into this country was built by Park, McCurdy & Co., of Pittsburgh, in 1863, for use in connection with their copper works in that city. The manufacture of open-hearth steel in this country has already exceeded the manufacture of crucible steel, but neither here nor in Europe has it attained to large proportions as compared with the Bessemer steel industry. Pennsylvania has from the first taken the lead in the manufacture of open-hearth steel in this country, if we except the pioneer enterprise at Trenton, already referred to.

We now come to consider the marvelous statistical position of Pennsylvania in comparison with other States as a producer of the various kinds of steel. Prior to 1860, the country had no steel industry worthy of mention, and as a matter of fact it was frequently left unmentioned in the census statistics. In the census year 1860, the United States is reported to have produced only eleven thousand eight hundred and thirty-eight tons of steel, valued at $1,778,240, of which Pennsylvania produced nine thousand eight hundred and ninety tons, valued at $1,338,200. Although these are the official census figures, it is scarcely credible that the country a quarter of a century ago produced so small a quantity of steel; yet even the supposition that the figures fall short of the actual facts is in support of the theory of a small production in the year mentioned, for if our steel industry had then attained to noticeable proportions it would most likely have received closer official attention. The smallness of the growth of this industry in the whole country in the fifty years from 1810 to 1860 is shown in the official statistics of production in these two years; in 1810,

the production was nine hundred and seventeen tons of steel, and in 1860 it was eleven thousand eight hundred and thirty-eight tons.

In the statistics for the census year 1870, we find that our steel industry had made some progress in the preceding decade. Our total production of steel had increased to forty-nine thousand seven hundred and fifty-seven tons of two thousand pounds. But this was still a very small quantity of steel for so large and progressive a country to produce. The next decade, however, witnessed a revolution in our steel industry; from being an infant industry, struggling for existence and for official recognition, for over a century, it suddenly became a giant industry which astonished the world by its magnitude. As compared with the production in the census year 1870, the production in the census year 1880 was as follows, in tons of two thousand pounds:

STEEL.	Census year 1870. *Net tons.*	Census year 1880. *Net tons.*
Bessemer steel, finished products,	19,403	889,896
Open-hearth steel, finished products,	None.	93,143
Crucible steel, finished products,	28,069	70,319
Blister and other steel,	2,285	4,956
Total,	49,757	1,058,314

Pennsylvania's share of the total production of steel in 1870 was thirty-five thousand three hundred and six tons, and in 1880 it was five hundred and ninety thousand six hundred and eighty-six tons. In each of the census years 1870 and 1880, Pennsylvania produced more than half of all the steel made in the country.

The statistics of the production of steel in the United States have been annually obtained by the American Iron and Steel Association since 1872, and since 1874 they have been so systematically and exhaustively collected that the annual production of each kind of steel in each steel-producing State has been ascertained and published. We give below complete tables of the production of steel since 1874.

The following table shows the production of Bessemer-steel ingots since 1874, in net tons:

CALENDAR YEARS.	Pennsylvania.	Illinois.	Other States.	Total.
1874,	85,625	62,492	43,816	191,933
1875,	148,374	136,356	90,787	357,517
1876,	258,452	171,963	95,581	525,996
1877,	328,599	111,299	120,689	560,587
1878,	426,481	179,500	126,245	732,226
1879,	514,165	250,980	163,827	928,972
1880,	643,894	304,614	254,665	1,203,173
1881,	844,501	375,763	318,893	1,539,157
1882,	933,631	397,436	365,383	1,696,450
1883,	1,044,396	273,325	336,906	1,654,627
1884,	1,031,484	339,068	170,043	1,540,595

The following table shows the production of Bessemer-steel rails since 1874, in net tons:

CALENDAR YEARS.	Pennsylvania.	Illinois.	Other States.	Total.
1874,	66,902	48,280	29,762	144,944
1875,	112,843	111,189	66,831	290,863
1876,	203,750	133,713	74,998	412,461
1877,	250,531	89,519	92,119	432,169
1878,	308,093	143,785	98,520	550,398
1879,	368,187	197,881	117,896	683,964
1880,	495,716	257,583	201,161	954,460
1881,	688,276	346,272	295,754	1,330,302
1882,	759,524	336,122	342,509	1,438,155
1883,	819,544	231,355	235,655	1,286,554
1884,	763,223	290,185	63,213	1,116,621

The following table shows the production of open-hearth steel ingots and direct castings since 1874, in net tons:

CALENDAR YEARS.	New York, New England New Jersey.	Pennsylvania.	Western and Southern States.	Total. Net tons.
1874,	5,300	1,700		7,000
1875,	3,010	4,240	1,800	9,050
1876,	6,085	7,547	7,858	21,490
1877,	6,652	7,771	10,608	25,031
1878,	8,228	12,231	15,667	36,126
1879,	14,660	19,575	22,055	56,290
1880,	23,293	48,003	41,657	112,953
1881,	29,600	63,363	53,983	146,946
1882,	30,936	67,822	61,784	160,542
1883,	20,904	69,333	43,442	133,679
1884,	16,700	81,501	33,416	131,617

The following table shows the production of crucible steel ingots and direct castings since 1874, in net tons:

CALENDAR YEARS.	New England.	New York.	New Jersey.	Pennsylvania.	Western States.	Southern States.	Total. Net tons.
1874,	1,509	2,696	8,164	23,289	570	100	36,328
1875,	1,620	2,300	7,098	26,615	1,500	268	39,401
1876,	1,098	2,300	6,806	28,217	700	261	39,382
1877,	1,974	2,032	6,749	27,983	1,400	292	40,430
1878,	1,602	2,800	7,377	30,585	480	62	42,906
1879,	1,608	2,300	8,651	43,614	605	2	56,780
1880,	660	3,500	10,387	57,077	800		72,424
1881,	2,780	4,961	14,500	66,290	1,231		89,762
1882,	1,000	4,693	12,400	65,139	1,857		85,089
1883,	2,373	2,976	10,539	63,687	880		80,455
1884,	1,832	1,975	11,549	42,295	2,003	8	59,662

The following table shows the production of blister, puddled, and patented steel since 1874, in net tons:

CALENDAR YEARS.	New England.	New York.	New Jersey.	Pennsylvania.	Western States.	Southern States.	Total. Net tons.
1874,	376	200		4,417	1,300	60	6,353
1875,	1,500		100	7,340		3,667	12,607
1876,		139	652	7,601	1,700	214	10,306
1877,				9,870	2,034	20	11,924
1878,	192	220		8,069	75		8,556
1879,	950	215		3,004	1,000	295	5,464
1880,	72	617		6,658	1,018	100	8,465
1881,	200			2,113	734		3,047
1882,				2,114	900		3,014
1883,	713	1,105		2,558	1,222		5,598
1884,		2,100	50	2,096	865		5,111

Detailed comment upon figures which tell as completely the story of the country's rapid growth in the establishment of a great industry, and of Pennsylvania's proud position in the formation of this industry, is unnecessary. The value of this industry to our country cannot be estimated. It is not found alone in the raw materials it has consumed; in the ore mines and coal mines it has opened; in the blast furnaces and rolling mills and steel works it has built; in the number of workmen it has employed, or indirectly sustained; the wages it has paid them, and the comforts they have consequently enjoyed; nor in the income it has yielded to the railroads of the country for the transportation of its raw materials and finished products. It is found also in the cheapening influence it has exerted in the building and maintenance of the country's railroads, through which they have been enabled in turn to cheapen the cost of transportation for all products. And it is found in the numberless contributions it has made to meet the wants of our American civilization, which requires cheap steel for a thousand uses, and without a domestic steel industry of enlarged proportions it could not have had the steel it has required at any price.

The Production of Iron and Steel in 1883 and 1884.

The production of iron and steel in the United States in 1884 is given in the following table in comparison with that of 1883:

PRODUCTS.	NET TONS. (Except nails.)		Decrease. Per cent.
	1883.	1884.	
Pig iron,	5,146,972	4,589,613	11
All kinds of rolled iron, except rails,	2,283,920	1,931,747	15
Bessemer steel rails,	1,286,554	1,116,621	13
Open-hearth steel rails,	9,186	2,670	71
Iron rails,	64,954	25,560	61
Kegs of cut nails included in rolled iron,	7,762,737	7,581,379	2
Crucible steel ingots,	80,455	59,662	26
Open-hearth steel ingots,	133,679	131,617	1
Bessemer steel ingots,	1,654,627	1,540,595	7
Blooms from ore, pig iron, and scrap,	74,758	57,005	24

This table presents some very striking comparisons. The decrease in the production of open-hearth steel rails, iron rails, crucible steel ingots, and blooms made from ore, pig iron, and scrap, was very great. These articles are seriously affected by the inroads of cheap steel. In no other branch was the decrease so serious. Rolled iron shrunk 15 per cent., Bessemer steel rails 13 per cent., and pig iron 11 per cent., but open-hearth steel ingots, nails, and Bessemer steel ingots held their own remarkably well in the face of the depression in business.

IRON ORE.

Table showing the number of Ore Mines, Production, &c., in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.

	Name of Operators by Blank Numbers.	Analysis										Average number of days in operation.	Number of persons employed.	Wages paid.	Tons of ore mined.
		Number of mines.	Per cent. iron.	Per cent. copper.	Per cent. silica.	Per cent. alumina.	Per cent. phosphorus.	Per cent. manganese.	Per cent. magnesia	Per cent. sulphur.	Per cent. sesquioxide.				
774,	Armstrong county,*	1													254
775,	Berks county,	1			18.28	6.05		1.19		3.27	60.84	237	14	$2.221	1,000
777,		1	42									240	11	4.000	4 618
782,		1	56									42	27	1.927	580
783,		1	48		8	2.60	.09		1.70	3.78		312	63	34 083	28 800
784,		1	59									216	15	2,851	2,000
		5										209	130	$45,082	36,998
788,	Blair county,	1	41.5				.056	1		.025		310	115	$29,313	33.459
790,		2	40									190	70	17 500	16,589
792,		1	33									275	62	15,500	10,348
		4										258	247	$62,313	60 396
794,	Centre county,	1	55			.864	.262	.517	.266	.013	78.32	134	35	$5,300	4,800
799,		1	40									151	100	18,156	28,316
		2										167	135	$23,456	33,116
810,	Chester county,	1	50									300	35	$20,181	11,000
801,	Clarion county,†	2	33									280	100	$21 616	13,412
873,	Cumberland county,	1										70	28	$7,228	2,646
805,		1	50									100	15	1,650	1,800

IRON ORE—Continued.

NAME OF OPERATORS BY BLANK NUMBERS.	ANALYSIS.										Average number of days in operation.	Number of persons employed.	Wages paid.	Tons of ore mined.
	Number of mines.	Per cent. iron.	Per cent. copper.	Per cent. silica.	Per cent. alumina.	Per cent. phosphorus.	Per cent. manganese.	Per cent. magnesia	Per cent sulphur.	Per cent sesquioxide.				
806, Cumberland county,	2	48.5									220	40	3,429	1,900
808,	13	43									250	273	59,262	54,370
	17										160	358	$71,569	60,716
812, Franklin county,	2	48			.192	1.541			.027		173	52	$8,684	3,971
787, Huntingdon and Bedford counties,	6													
Analysis Huntingdon county mines,		54		15.47	.320	.088	.15		.083		265	213	$70,000	44,421
Analysis Bedford county mines,		51		16.68	.312	.62	.67							
818, Juniata county,	1	37									292	11	$5,255	2,495¼
826½ Lancaster county,	2	46.70		14.60	2.83	.84	1.46	3.21			280	80	$18,500	33,000
820, Lawrence county,	2	48									75	15	$1,125	1,000
822, Lebanon county.														
Analysis No. 1 mine,		42.098	.810	19.420		.002			2.467					
Analysis No. 2 mine,		44.734		18		.021			.232					
Analysis No. 4 mine,		55.414	.718	11.630		.001			.855					
Analysis No. 5 mine,		57.42		9.84		.002			.014					
Analysis No. 6 mine,	5	62.211	.080	6.290		.004			3.270		300	165	$66,654	392,941½
827, Lehigh county,	1	48									300	27	$15,000	6,000
829,	1	30									20	14	2,650	100
831,	1										90	3	90	47
832,	1	48									220	10	2,000	1,200
833,	1	37									152	22	1,814	2,000
834,	2	38									240	25	4,500	6,000
836,	3	48									241	40	6,600	5,939
837,	1	38									240	10	1,800	2,400
838,	1	48									240	16	2,880	2,000

839,	Lehigh county,	1	35									110	20	705	480
840,		1	56 40		3.94	7.16	.22	2.95	.27			200	10	2 870	2,800
843,		2	37									220	28	6,000	5,500
844,		1	40									57	18	1,020	689
846,		2	42									260	36	5,000	5,000
847,		2	43									240	30	7,600	8,000
849,		1										95	8	760	146
850,		2	41									200	14	2,100	1,800
		24										183	331	$63,389	50,101
858,	Mifflin county,	1	38									100	6	$500	500
859,	Northampton county,	4										180	17	$5 520	3 661
860,		1	40									288	35	4.200	5,600
862,		1	40									220	11	1,800	1,800
		6										229	63	$11,520	11,061
863,	Perry county,	4	47.38			.964	.60	.206	.87	.31	68.57	240	35	$12,985	10,300
864,		1	45									264	4	1,056	900
865,		1	40									240	7	2 688	3,264
866,		2	48									150	10	2 200	1,100
867,		4	50									288	42	27,000	10,414⅕
		12										237	98	$45 929	25,978⅕
875,	Snyder county,	1	45									140	50	$5.000	5.000
876,		1	45									250	22	7,000	2,660
877,		6	40									250	30	5,500	5.000
879,		1	50									170	15	4,000	1,200
		9										202	117	$21,500	13 860
880,	York county,	2	50									132	40	$5 603	3,290
881,		1										285	20	4 832	1,378
882,		1										11	15	174	89
884,		1	40									250	10	2,000	2,000
		5										169	85	$12 609	6,757
	Total reported for year 1884,	107										215⅕	2,241	$572.882	801,978½
	Total reported for year 1883,	56										215¾	920	321,014	545.966
	Increase over 1883,	51											1,321	$251,868	256,012¼

* Labor performed by firm. † Men and days approximated.

NOTE.—Since the above was tabulated, reports were received from Berks, Lehigh, and York counties which swell the total to 2,428 persons employed, $623,376 wages paid, and 829,011 tons of ore mined.

BLAST FURNACES.

Table showing the number of blast furnaces in and out of blast, the production, &c., in the several counties of Pennsylvania, compiled from returns made to this Bureau for the year ending December 31, 1884.

COUNTY.	NO. OF STACKS			Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of tons of iron made.
	In blast.	Out of blast.	Total.				
Allegheny	10	6	16	263	1,739	$928,091	435 318⅔
Armstrong	2		2	281	101	41,711	25 444⅓
Bedford	3	2	5	232	294	99,034	38,927
Berks	12	8	20	306	471	229.829	*98,588⅔
Blair	5	4	9	299	332	124,514	43,136
Bucks	1		1	314	384	141,108	36,498
Cambria	5	2	7	365	420	209,449	154,141⅔
Carbon	3	1	4	265	100	39,346	21,357½
Centre	3		3	247	28	7,599	3,765
Chester	2	2	4	310	97	49,457	23,742⅔
Clarion		1	1				
Columbia	2	1	3	365	106	41,500	16,585½
Cumberland	3		3	196	203	48,000	9,525
Dauphin	8	4	12	231	693	299,098	175,463⅔
Delaware		1	1	200	80	25,000	15,000
Erie		1	1				
Fayette	3	2	5	279	141	90,134	39,159
Franklin	1	3	4	85	29	3,663	2,397
Huntingdon	4	2	6	217	181	82.703	20,981
Lackawanna	4	1	5	291	411	177,678	82 574
Lancaster	10	2	12	239	576	132,443	52,764½
Lawrence	4	1	5	246	305	153,717	101,805
Lebanon	7	2	9	319	389	187,885	114,601
Lehigh	12	14	26	260	683	282,558	155,996
Mercer	6	6	12	277	356	159,973	97,900
Mifflin	2	1	3	173	101	32,067	9 216
Montgomery	4	7	11	195	199	65,551	39.334
Montour	1	5	6	363	41	14,923	8,608½
Northampton	9	10	19	282	772	369.283	200,002¼
Northumberland	1	. . .	1	148	27	35,214	1,671
Perry	2		2	248	107	53,553	26,456
Philadelphia		1	1				
Schuylkill	3	2	5	281	106	48,635	24,955
Union	1	1	2	290	125	36,000	4,918
Westmoreland	1	. .	1	215	65	23,377	11,952½
York		1	1				
Total for 1884	134	94	228	231	9,662	$4,333,783	2,092,754½
Total for 1883	169	107	276	282	13,032	5,644.238	2,414,406
Decrease since 1883	35	13	48	51	3,370	$1,310,455	321,652

* Also product of charcoal furnace, valued at $16,281.

The number of days in which blast furnaces are in operation has reference more particularly to the number of days in which the furnaces were in blast, and does not imply that the employés averaged that number of working days. The highest estimate we can make would not give the majority of employés more than 250 working days in the year.

On March 16, 1885, too late for tabulating, we received the following report of the Carrie Furnace Company of Pittsburgh: In blast, 1; total, 1; average number of days in operation, 258; number of persons employed, 94; amount paid in wages, $39,313; number of tons of iron made, 27,488$\frac{19}{22}\frac{39}{68}$.

Complete returns would give a total production of about 2,385,000 tons for the entire State.

ROLLING-MILLS.

Table showing the number of rolling-mills, number of furnaces, production, &c., in the several counties of Pennsylvania, compiled from returns made to this Bureau, for the year ending December 31, 1884.

COUNTY.	Number of establishments.	Number of puddling furnaces.	Number of heating furnaces.	Number of trains of rolls.	Number of nail machines.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of tons of iron of all grades produced.	Number of kegs (100 lbs.) of nails, spikes, and tacks.	Number of kegs of bolts, nuts, rivets, and washers.
Allegheny,	35	925	334	182	419	230	16,256	$8 247,485	430,381	752,883	8,965
Armstrong,	3	48	18	17	. .	196	574	307,798	13,748½		
Beaver,	2	8	7	4		250	11	5,000	*		
Berks,	11	64	37	26		187	1,195	353,423	30,043	226,269	
Blair,	5	63	17	16	87	220	636	250,265	10,129½	35,170½	
Bradford,	1	4	1	2	26	260	90	33,000	20,700	40,000	
Bucks,	1	.	2	2		206	54	31,500	2,500		
Cambria,†											
Carbon,‡	1	5	1	2	‡						
Centre,	4	14	7	6	30	140	179	50,329	1 450	48,498	
Chester,	8	45	53	28	.	245	2,382	887,290	52,891		
Columbia,	1	11	3	3	. .	145	112	31,114	3,087		
Crawford,	1	2	2	1		90	17	3,700	43		
Cumberland,	1	9	3	3	78	281	397	139,665	580	178,659	
Dauphin,	3	35	20	9	103	287	550	323 594	7,000	243,862	
Delaware,	2	11	13	7	3	205	390	176,896	7,910	. . .	16
Lackawanna,	2	14	6	6		195	252	73 623	8,672		
Lancaster,	7	79	24	21		290	675	262 245	33,070		
Lawrence,	3	68	23	13	110	177	610	210 508	6,510	80,749	
Lebanon,	4	13	9	10		286	307	121,181	13,991¼		
Lehigh,	3	45	14	14		217	758	254,620	25,303	1,596	
Lycoming,	2	8	3	4	72	279	223	81,012	3 500	84,089	
Mercer,	3	68	11	10	64	141	680	243 790	12,036½		
Mifflin,	1	11	5	5		280	120	74,241	5,985		
Montgomery,	11	116	53	40	95	235	2,900	1,141,538	105,189	233,255	
Montour,	4	48	30	11	48	178	833	176,202	14 480½	64,525	804
Northampton,	3	14	13	6		215	241	120,924	8,251		
Northumberland,	4	44	7	9	132	263	552	226 093	9,260	183,016	
Perry,	1	16	6	4	64	285	350	153,454	10,714	110,213	
Philadelphia,	8	31	41	28	15	261	831	488,480	44,482	51,393	
Schuylkill,	3	25	16	8		267	630	197.907	17,783		
Union,	1	2	1	1	17	27	54	1,521	1,693		
Washington,	1	4	2	4	.	250	175	96,000	2,400		
Westmoreland,	1	12	8	3	. .	265	275	10,500	12,850		
York,	1	6	4	3		250	150	75,000	12,300		
Total for 1884,	142	1,868	794	501	1 363	221	33,459	$14,851,898	928,942¼	2,334,177	9,785
Total for 1883,	135	2,099	842	526	1,271	251	36,503	17,845,131	1,157,876	2,333,879	
Increase over 1883,	7				92					298	9,785
Decrease from 1883,		231	53	25		30	3,044	2,993,233	268,931¾		

*Manufactured spades and shovels. † See Bessemer steel. ‡ Not running in 1884.

On March 16, 1885, too late for tabulating, we received the following report from the Keystone Rolling-Mill Company, Limited, of Pittsburgh: Puddling furnaces, 29; heating furnaces, 6; trains of rolls, 4; days in operation, 117; wages paid, $61,634 88; tons of iron manufactured, 4,966; persons employed, 200.

BESSEMER STEEL

Table showing the production, &c., of Bessemer steel of the several counties of the State, compiled from returns made to this Bureau, for the year ending December 31, 1884.

COUNTY.	Number of converters.	Capacity of converters in tons.	Number of iron cupolas.	Number of spiegel cupolas.	Number of open hearth furnaces.	Number of other furnaces.	Number of trains of rolls.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	PRODUCT.		
											Steel rails, net tons.	Steel, other than rails, net tons.	Total steel product, net tons.
Allegheny,	6	21	9	7	. . .	13	6	217	1,298	$1,087,770	162,285	47,448	209,733
Cambria,	2	7	5	2	2	1	1	305	700	418,668	103,913	45,360	149,273
Dauphin,	5	5	4	2	2	23	4	290	1,050	557,586	127,924	21,292	149,216
Lackawanna,	4	11	8	6	. . .	33	6	270	1,420	894,794	175,595	1,062	176,657
Northampton,	5	7	8	4	. . .	10	5	279	738	430,870	137,856	20,742	158,598
Total, 1884,	22	51	34	21	4	80	22	292	5,206	$3,296,688	707,573	135,904	843,477
Total, 1883,	19	55	34	25	2	57	18	254	7,502	4,902,290	773,758	108,666	882,424
A, increase over 1883. B, decrease over 1883.	A 3	B 4	. . . . .	B 4	A 2	A 23	A 4	A 38	B 2,296	B $1,605,602	B 66,185	A 27,238	B 38,947

The actual number of working days for four fifths of the men employed was but 264, the average number of days given in the table being for all the counties, regardless of the number of employés. The total production of Bessemer steel rails for 1884, if we include manufactures not reported, would be about 763,000 net tons.

CRUCIBLE STEEL.

Table showing the production, &c., of Crucible Steel in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.	Remarks.
Allegheny,	12	277	3,723	$2,135,516	$7,160,780	
Armstrong,	1	300	62	31,000	100,000	
Beaver,	2	250	450	233,954	1,086,728	
Delaware,	2	300	134	40,523	107.932	
Philadelphia,	5	271	682	438,292	1,124 895	
Total, 1884,	22	280	5,051	$2 879 285	$9,580,335	
Total, 1883,	19	290	5,379	3,177,384	. . . .	Value of products not given in 1883.
	A.	B.	B.	B.		
A—Increase over 1883.	3	10	328	$298,099		
B—Decrease over 1883.						

BLOOMARIES AND FORGES.

Table showing the production, &c., of Bloomaries and Forges in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.

COUNTY.	Number of establishments.	Number of refineries.	Number of fires.	Number of hammers.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of tons of blooms, (2,464 lbs.)	Value of product where tons not given.
Allegheny,	2	. .	. .	. . . .	255	65	$67,000	. .	$150,000
Berks,	4	3	21	8	180	92	35,794	2,243	
Blair,	2	3	13	2	180	46	11.378	975	
Centre,	3	2	28	3	160	79	23.711	2,345	
Chester,	1	. . .	4	1	216	15	4 881	799	
Columbia,	1	1	3	2	60	5	600	61	
Cumberland,	2	2	11	2	188	38	15.900	2,050	
Dauphin,	1	1	5	1	150	12	3.000	350	
Franklin,	1	1	8	2	131	22	7,751	910	
Lebanon,	1	.	6	1	180	26	4,625	621	
Perry,	2	2	12	2	193	55	19,600	2,201	
Total for 1884,	20	15	111	24	172	455	$194.240	13,055	$150,000
Total for 1883,	19	18	86	22	203	438	147.114	15 005	
Increase over 1883,	1	3	25	2	. .	17	$47,126		
Decrease over 1883,	. . .	. . . .	. . . .	. . . .	31	. . . .	. . .	7,950	

IRON FOUNDRIES.

Tables showing the number of Iron Foundries, production, &c., in the several counties of this State, compiled from returns made to this Bureau for the year ending December 31, 1884.

COUNTIES.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Number and daily capacity of cupolas in tons.	Amount paid in wages.	Number of tons of iron castings.	Number of pounds of brass castings.	Value of product where amount is not stated.
Allegheny,	20	274	1,216	22— 212	$597,105	18,024		$417,230
Armstrong,	3	180	19	4— 8	4,310	790		
Beaver,	1	150	32	1— 5	11,966	300		
Bedford,	4	204	18	4— 22	4,636	166	2,500	
Berks,	7	296	543	11— 70	220,574	13,080	1,055	
Blair,	4	205	59	5— 29	29,900	732	5,939	
Bradford,	4	296	41	4— 6	14,420	304	3,000	
Bucks,	1	260	20	1— 5	9,285	400		
Butler,	3	230	10	3— 3	3,300	275		
Cambria,	2	253	13	2— 6	4,418	280		
Cameron,	1	200	3	1— 1	500	10	70	
Carbon,	2	270	146	3— 25	40,379	1,010	10,000	
Centre,	1	250	6	1— 1	1,900	28		
Chester,	4	213	90	4— 19	9,006	455	14,000	
Clarion,	3	250	11	3— 6	1,360	85		
Clearfield,	3	217	26	3— 7	9,800	406	1,000	
Clinton,	4	243	25	4— 5	8,254	185	400	
Columbia,	3	238	38	4— 6	12,790	518	500	
Crawford,	4	257	145	4— 11	61,033	1,390	4,700	
Cumberland,	3	217	40	3— 6	10,000	300	10	
Dauphin,	3	250	22	3— 8	7,740	250	250	
Delaware,	1	310	294	2— 30	125,000	2,100	36,300	
Erie,	6	260	762	5— 63	363,258	12,699		664,250
Fayette,	2	275	26	2— 2	10,500	200	1,500	
Franklin,	2	160	26	2— 3	10,130	256		
Fulton,	1	150	3	1— 1	525	10		
Greene,	2	257	4	2— 2	1,200	40		
Huntingdon,	3	283	9	3— 9	3,350	143	200	
Indiana,	4	285	29	4— 11	10,730	456	400	
Juniata,	3	150	5	3— 3	550	58		
Lackawanna,	4	213	105	5— 16	49,738	1,426	36,273	
Lancaster,	7	262	118	7— 14	37,251	1,340	1,000	
Lawrence,	4	196	55	3— 8	52,535	410	40,000	7,500
Lebanon,	2	269	18	3— 14	5,137	423		
Lehigh,	7	282	487	16— 86	175,540	14,675		
Luzerne,	6	234	141	7— 19	58,856	3,095	22,275	
Lycoming,	4	299	68	5— 25	28,098	455	11,300	
McKean,	1	200	3	1— 3	1,200	50	2,400	
Mercer,	3	183	18	4— 20	5,399	208	7,186	
Mifflin,	1	90	2	1— 1	90	12		
Monroe,	3	217	23	3— 7	8,436	205	2,300	
Montgomery,	8	253	229	12— 65	95,538	4,445	8,178	
Montour,	1	310	35	1— 5	14,155	330	3,600	
Northampton,	5	295	82	7— 21	35,679	858	4,400	
Northumberland,	5	243	28	6— 14	10,852	264	750	
Perry,	4	217	16	5— 7	3,404	230	500	
Philadelphia,	36	265	2,182	50— 375	1,117,978	21,220	229,677	491,480
Schuylkill,	5	276	85	8— 33	32,948	815	6,119	
Somerset,	1	200	2	1— 1	425	22		
Susquehanna,	3	107	14	3— 6	625	110		
Tioga,	4	220	16	4— 7	4,300	184	3,050	
Union,	1	300	10	1— 2	4,200	47		
Venango,	2	250	10	2— 3	3,556	90	400	
Warren,	1	150	2	1— 4	400	50		
Washington,	2	295	27	2— 4	10,563	433		
Wayne,	3	279	23	3— 3	9,100	300	2,075	
Westmoreland,	3	298	19	2— 6	10,757	170		10,928
Wyoming,	2	250	13	2— 2	4,000	44	150	
York,	2	307	242	6— 61	93,106	4,100	4,000	
	224	238	7,763	286—1,407	$4,594,785	110,742	466.457	$1,591,388

Note A.—Of the total number of men employed, 5,190 were employed in foundries which were in operation 275 days during the year, and 1,420 men were employed in foundries which were in operation 263 days, making an average of 269 working days for 6,610 employés. The total average given in table is for all the *counties*, not employés.

Note B.—It is not possible to obtain a correct list of iron foundries so as to classify them under the above heading. Many firms manufacturing boilers, engines, stoves, &c., do a foundry business; but it being subordinate to their general business, their product, &c., will be found elsewhere under proper headings.

Since the above table was prepared, we received the following report from F. J. B. Harnish, of Lancaster: Number of establishments, 1; average number of days in operation, 285; number of persons employed, 9; number and daily capacity of cupolas in tons, 1—2; amount paid in wages, $2,456 05; number of tons of iron castings, 116.

IRON AND ITS PRODUCTS.

COUNTY.	Number of establishments.	Average number of days in operation	Number of persons employed.	Amount paid in wages.	Value of product.
Agricultural Implements.					
Allegheny,	2	257	148	$81,580	$221,001
Armstrong,	1	250	4	600	2,000
Berks,	1	50	1	84	30
Bradford,	1	310	77	46,123	85 000
Bucks,	1	310	23	8 500	27,000
Cambria,	1	150	6	2.000	3,600
Centre,	1	200	5	2,340	6.000
Chester,	1	150	4	275	1,875
Columbia,	1	300	5	1.488	3 500
Cumberland,	1	310	4	1,200	3,500
Dauphin,	2	250	26	11,502	25 830
Erie,	1	300	65	30,000	100,000
Franklin,	1	285	3	444	3,450
Lancaster,	6	185	84	14 482	43 542
Lycoming,	1	200	4	900	3.000
Montgomery,	3	300	73	40,783	112,662
Northampton,	2	306	67	25,500	61.000
Philadelphia,	6	300	296	176 310	532,616
Pike,	1	250	2	700	1,500
Susquehanna,	1	300	25	9 000	30 000
Union,	2	242	44	14 406	91 917
York,	4	271	470	161,768	582,350
Total, 1884,	41	279	1,536	$629 985	$1 941,373
Total, 1883,	55	234	1 656	706.897	2.046,661
Decrease,	14	..	120	$76,912	$105,288
***Axes, Saws, and Shovels.**					
Allegheny,	2	288	395	$229.206	$551,909
Beaver,	2	250	170	83.000	275 000
Centre,	1	166	44	7.770	21 277
Clinton,	2	270	105	31,277	89,483
Mifflin,	1	300	200	50 000	250,000
Montgomery,	1	225	85	49.000	180,000
Northampton,	1	300	18	7 899	24,606
Luzerne,	1	258	13	6 664	24,233
Lycoming,	1	320	1	400	50
Philadelphia,	2	304	140	77,614	352 431
Total, 1884,	14	269	1,171	$533 830	$1 778,989
Boilers and Engines.					
Allegheny,	8	294	549	$291,406	$772.119
Berks,	2	312	96	31,590	108,000
Blair,	1	176	3	900	1,800
Chester,	1	250	11	4,212	11,650
Clearfield,	1	311	15	7.722	15,000
Clinton,	1	300	15	7.200	15,000
Dauphin,	1	300	45	18 000	36.000
Erie,	7	301	660	392,821	1.210,607
Franklin,	2	285	985	378 938	1,607.637
Lancaster,	2	303	64	23 230	56,785
Lebanon,	1	308	22	6.200	24 697
Lehigh,	2	277	56	20 439	47.692
Luzerne,	1	310	114	60 617	148 284
Lycoming,	2	301	42	21 498	52,167
Mercer,	1	300	15	3,422	12.000
Montgomery,	3	302	77	41 249	134 366
Northampton,	1	304	320	10.227	17,600
Philadelphia,	11	290	301	186,431	669.752
Schuylkill,	3	258	25	9.817	32.620
Venango,	1	308	5	3,050	5,900
Warren,	1	305	100	52,980	200,000
York,	1	290	28	8 000	40.000
Total, 1884,	54	295	3,548	$1 579,949	$5 219,676

*Disston & Son included in rolling-mills.

IRON AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Bolts and Nuts.					
Allegheny,	7	227	290	$91,685	$475,771
Berks,	1	280	123	41,693	200 000
Philadelphia,	4	288	720	250,107	926,772
Total, 1884.	12	262	1,133	$383,485	$1,602,543
Bridges.					
Allegheny,	3	300	862	$452 495	$1,667.066
Beaver,	1	262	50	14 474	68.279
Bradford,	1	180	300	90,000	360 000
Chester,	1	234	175	94 375	700,000
Philadelphia,	1	260	15	5,500	18,000
Total, 1884,	7	247	1,402	$656 844	$2,813,345
Bath Boilers.					
Philadelphia,	5	270	40	$20,636	$120,200
Cutlery.					
Beaver,	1	240	200	$25,000	$75,000
Chains.					
Allegheny,	1	300	30	$12 000	$40 000
Berks,	1	293	9	2,110	7,600
Philadelphia,	4	223	84	31,000	108 401
York,	2	260	46	11,597	51,000
Total, 1884,	8	269	169	$56,707	$207,001
Files and Rasps.					
Beaver,	1	184	195	$69 953	$125 581
Berks,	1	300	6	2 000	2 500
Philadelphia,	4	257	376	136,047	402 506
Total, 1884,	5	247	577	$208,000	$530,587
Fire-arms.					
Berks,	1	300	1	$70	$875
Lebanon,	1	225	3	1.013	2,500
Northampton,	1	300	13	2,000	6 000
Total, 1884,	3	275	17	$3,083	$9 375
Locomotives.					
Allegheny,	2	283	446	$272.539	$677.056
Lackawanna,	1	310	762	380,857	1,027,516
Philadelphia,	1	307	2,775	1,418,312	4 544,410
Total, 1884,	4	300	3,983	$2,071,708	$6,248,982
General Machinery.					
Adams,	1	300	4	$1.000	$3,000
Allegheny,	7	295	362	177.404	543 000
Beaver,	2	227	151	50.798	140,000
Berks,	2	275	126	41,100	98,000
Bradford,	1	300	20	5,846	9 500
Bucks,	1	280	13	2 325	6,500
Centre,	2	302	32	12,810	35.963
Chester,	2	250	43	18,199	126 475
Clinton,	1	300	1	350	10,000
Crawford,	1	307	9	4,673	16,000
Dauphin,	2	283	88	55.154	151,424
Erie,	2	290	120	75,154	201.424
Fayette,	2	300	44	22,906	66,739
Franklin,	1	294	120	40,149	100,000

IRON AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
General Machinery—*Continued.*					
Lancaster,	2	307	37	$18,293	$54,837
Lebanon,	1	300	75	24 915	67,234
Lycoming,	4	303	312	118,291	347,537
McKean,	1	308	55	32,476	80,000
Mercer,	1	300	25	14 750	38,000
Montgomery,	1	300	10	3,360	10,000
Northampton,	4	269	81	20,476	75,762
Northumberland,	2	210	151	39,580	175 500
Philadelphia,	46	300	2,347	1,248 599	3,317,927
Schuylkill,	4	300	53	30,083	58,399
York,	1	297	24	11,336	21 597
*Total, 1884,	93	297	4,303	$2,070 023	$5 754 818
Sailing Vessels, (Iron.)					
Delaware,	1	309	1,132	$630,677	$1,677 078
Philadelphia,	1	309	1,472	718 021	2,110 398
Total, 1884,	2	309	2,604	$1,348,698	$3,787,476
Stoves, Ranges, and Tinware.					
Allegheny,	3	224	200	$114.118	$296,724
Beaver,	1	270	28	18,000	26,500
Berks,	1	300	63	32,414	64.500
Bucks,	1	209	60	23 552	51,000
Carbon,	1	300	35	14,258	34,000
Erie,	3	279	302	147.655	390,642
Lancaster,	1	261	160	87,663	162,179
Lawrence,	2	231	139	70,382	170,090
Lebanon,	1	200	36	12,000	34 000
Lackawanna,	1	270	6	2,200	6,500
Luzerne,	1	275	110	35,000	175.000
Montgomery,	2	222	251	127.000	350.000
Montour,	1	200	40	12.550	24,000
Philadelphia,	12	285	1,081	568,967	1,847,831
Total, 1884,	31	252	2,511	$1,265,759	$3,632 966
Springs and Axles.					
Allegheny,	2	192	141	$37 492	$216.638
Erie,	1	90	4	2,500	12 000
Lehigh,	1	130	282	46.356	407 022
Philadelphia,	9	293	217	124 059	677,381
Total, 1884,	13	205	644	$210,407	$1,313,041
Switches and Signals, (Railroad.)					
Allegheny,	1	304	259	$145.120	$451.813
Philadelphia,	1	300	160	86,000	212,630
Total, 1884,	2	302	419	$231,120	$664,503
Pipes and Tubes, (Iron.)					
Allegheny,	1	310	1,500	$625,000	$4.500,000
Berks,	2	219	727	227 327	1,369.987
Dauphin,	1	255	800	250.000	2,000,000
Lehigh,	1	348	7	3.600	8,000
Philadelphia,	2	215	478	231,394	900 241
Total, 1884,	7	269	3 512	$1,337,321	$8,778,228

* Comparisons in the manufacture of "boilers and engines," and "general machinery," cannot be made this year, by reason of the fact that minor industries, which, in 1883, were classified separately, are now consolidated with general machinery in some cases, and with boilers and engines in others. Some of the iron foundries are connected with establishments manufacturing boilers, engines and general machinery. We have seen proper to make three distinct classifications, crediting each firm or individual to that particular branch of industry employing the greater number of hands and paying the highest amount of wages, but in no case, we believe, have we credited a firm or individual to more than one of the three industries.

IRON AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Railings.					
Philadelphia,	6	293	248	$95,749	$410,052
Steel Pens.					
Philadelphia,	1	300	29	$8,500	$23,000
Safes and Locks.					
Allegheny,	2	310	15	$8,414	$16,210
Lancaster,	3	204	34	11,009	26,500
Philadelphia,	3	293	147	101,532	279,474
York,	1	294	56	27,966	51 000
	9	275	252	$148,921	$373,184
Scales.					
Philadelphia,	3	293	98	$52.480	$175,352
York,	1	310	10	5,000	12,000
	4	301	108	$57,480	$187,352
Tools.					
Allegheny,	7	260	316	$152,713	$532,941
Blair,	1	150	4	350	2,000
Chester,	2	175	2	150	1,600
Delaware,	1	300	10	2.500	24,000
Erie,	1	283	67	22,134	73,164
Lancaster,	3	267	19	6,700	20,900
Lycoming,	1	306	26	10,986	24,926
McKean,	3	268	23	18,663	60.878
Montgomery,	2	262	72	31,587	81,709
Philadelphia,	12	279	673	389,937	881,352
Total,	33	255	1,202	$636,720	$1,703,470
Wire and Wire Goods.					
Allegheny,	4	229	788	$357,882	$2,167,837
Beaver,	1	250	35	20,000	100,000
Erie,	1	300	4	2,500	6,000
Lackawanna,	1	290	3	1,425	6,475
Luzerne,	1	309	6	3,610	10,000
Northampton,	2	295	315	132,141	1,050,000
Philadelphia,	4	289	120	53,978	313 462
Schuylkill,	2	202	13	3,705	16,510
	16	271	1,284	$575,241	$3,670,284

IRON AND ITS PRODUCTS—Continued.

RECAPITULATION.	Number of establishments.	Number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.	Where value is not given, weight of materials made in tons.
Agricultural implements,	41	279	1,536	$629,985	$1,941,373	
Axes, saws, shovels, &c.,	14	269	1,171	533,830	1,778,989	
Bath boilers,	5	270	40	20,636	120,200	
Bessemer steel,	7	292	5,206	3,296,688	....	843,477
Blast furnaces,	Stacks, 134	231	9,662	4,333,783	.....	2,092,754½
Bloomaries and forges,	20	172	455	194,240		13,055
Boilers and engines,	54	295	3,548	1,579,949	5,219,676	
Bolts and nuts,	12	262	1,133	383,485	1,602,543	
Bridges,	7	247	1,402	656,844	2,813,345	
Chains,	8	239	169	56,707	207,001	
Crucible steel,	22	280	5,051	2,879,285	9,580,335	
Cutlery,	1	240	200	25,000	75,000	
Files and rasps,	5	247	577	208,000	530,587	
Fire-arms,	3	275	17	3,033	9,375	
Fonndries,	224	238	7,763	4,594,785		110,742 tons of iron, 466,457 pounds of brass.
General machinery,	93	297	4,303	2,070,023	5,754,818	
Iron ore,	114	216	2,428	623,376		829,011
Locomotives,	4	300	3,983	2,071,703	6,248,982	
Pipes and tubes,	7	269	3,512	1,337,321	8,778,223	
Railings and fences,	6	293	248	95,749	410,052	
Rolling-mills,	142	221	33,659	14,913,733		933,908¾ tons of iron. 2,334,177 kegs of nails, &c., 9,785 kegs of bolts, nuts, and washers.
Sailing-vessels,	2	309	2,604	1,348,698	3,787,476	
Safes and locks,	9	275	252	148,921	373,184	
Scales,	4	301	108	57,480	187,352	
Springs and axles,	13	205	644	210,407	1,313,041	
Steel pens,	1	300	29	8,500	23,000	
Stoves, ranges, &c.,	31	252	2,511	1,265,759	3,632,966	
Switches and signals,	2	302	419	231,120	664,503	
Tools,	33	255	1,212	636,720	1,703,470	
Wire and wire goods,	16	271	1,284	575,241	3,670,284	2,334,177 kegs of nails, &c., 9,785 kegs of bolts & nuts, 466,457 pounds of brass, 4,822,948 tons of iron.
Grand total, 1884,	1,034	271	95,126	$44,992,056	$60,425,678	

TEXTILE FABRICS.

REVIEW OF THE TEXTILE INDUSTRIES FOR 1884.

[The following article on the textile industry for the year 1884 was prepared for the Bureau by Charles Heber Clark, Esq., editor of the *Textile Record*, Philadelphia.]

The depression in business which began to make itself manifest in 1883, and which affected the civilized world, reached its lowest point in 1884; and throughout that year there were few, if any, indications of the reaction which early in 1885 seemed to be distinctly promised. With the exception of the iron trade, none of the great manufacturing industries of Pennsylvania felt the effects of this depression more keenly than the textile industry in some of its branches. Like the iron trade, it is exposed to sharp competition from abroad; and the low prices of foreign goods, (following sluggish trade in Europe,) combined with blunders and other defects in our tariff, systematic under-valuation of goods sent hither from abroad, and, possibly, too great production of certain classes of fabrics here, operated to make difficult the marketing, at fair prices, of many varieties of our textile products.

The causes of the world-wide depression of trade may be obscure, but it is certain that those causes, whatever they are, could not have exercised here nearly so great an influence as in fact they manifested, if our own markets could have been kept more exclusively for our own mills. The view has been expressed that the textile mills of this country could supply the whole of the normal domestic demand for fabrics by running during six months of each year. But that this is fallacious is clearly demonstrated by the facts that our imports of textiles, even in good times, approach in value one hundred million dollars a year; and that almost all the varieties of the fabrics so imported can be, and, in a degree are, produced at home. In the industries which are protected by Nature, and which, for that reason, have absolute protection, foreign competition being prohibited, wages are to-day as large as they were in so-called "good times," and the commercial depression has had but little power to check active operations. Thus the building trades, and other industries which are wholly safe from European rivalry, have suffered little, if at all; and the inference certainly is fair that if the textile industry could have had such protection, wages would have been as high as in the naturally protected industries and the products of all the mills would have been taken at good prices.

The attempt to explain the depressed condition of portions of this industry by the contention that there is over-production seems unlikely to be successful. In the first place, it is probable that the total product of the mills in 1884 was no larger, and it may even have been smaller, than in 1882. There were more mills in existence last year, but the stoppage of

machinery may be considered to have overbalanced this apparent gain. In 1882, however, the entire product of the mills was, without difficulty, taken and consumed; and, in addition, a very large mass of imported fabrics also was consumed. The population of the country certainly was much larger in 1884 than in 1882, and in view of this fact, the only way in which the existence of an over-supply of fabrics can be explained seems to be that the people bought and used less material, making a surplus product where, had there been an ordinary demand, there would have been a product equal to, if not short of, the demand.

To *under-consumption*, therefore, rather than to over-production, we may attribute the apparent excess of supply. A very small economy on the part of each individual in a population of fifty-five millions would suffice to produce such a state of things. It has been estimated that the difference between good times and "hard" times is not more than two or three per centum of the whole mass of business done. A little less buying, following a slightly decreased power to buy, multiplied by the whole number of wage-earners in a country, will make all of this difference; and this is one reason why reduction of wages should be the last resort of employers who find that they are compelled to cut down expenses.

It is necessary to observe, with respect to the textile industries of this State, that

First. While there may have been, last year, a decreased production of fabrics, that decrease appeared only in certain lines; and that there was a vast quantity of goods, only a little smaller in dimensions than usual, made, sold, and consumed by the people. Prices were so low, in some cases, that there was little or no profit; but the bulk of the out-put was taken by the country just as it was in former years. It is important that this should be remembered, for it supplies assurance that the domestic market has really lost none of its powers of consumption, and will quickly exhibit larger needs when the earnings of the people increase and the requirements of narrow economy pass away.

Second. There are departments of textile industry in this city and State which felt the depression to a very small extent and some which did not feel it at all, but, on the contrary, found the year 1884 a year of high prosperity. In every case, the manufacturers who had this exceptional experience were men who produced fabrics of the higher grades. They made goods of such excellence that people were willing to pay fair prices for them, and they were so sheltered by the tariff, and by the scarcity of rivals at home, that they could not be injured by foreign or domestic competition.

Third. The worst sufferers were the manufacturers who confined themselves to the lower grades of cotton fabrics, for which there is, in the first place, a demand that does not, as the country increases in wealth and luxury, grow in proportion to the growth of the population; and which, in the second place, are encountering competition, of a more or less hurtful

kind, from the newly-established Southern mills. These mills are still far from having the ability to meet even a large share of the demand for such fabrics in the South and West; but the appearance of their goods in those markets, at a time when the general demand had suffered a slight diminution, operated to force down prices, and to make more difficult than it otherwise would have been, the task of finding consumers for the whole product of the Northern mills.

One fact of very great importance may, perhaps, be deduced from these considerations: It is that there is a pressing necessity for a larger diversification of our textile industries. As the South takes up the business of making coarse cottons, (following the rule that the first attempts at manufacture are always in the lines requiring the least skill,) the North should strenuously endeavor to advance the quality of its cotton fabrics, and to take from Europe her American trade in fine cottons, just as the South promises to take from the North at least a part of its trade in cottons of the lower grades. This is, in fact, the tendency of the movement now, and the hard times will probably accelerate it; so that, out of the distresses of the past year, much and lasting good will actually come.

We can make here every kind of textile fabric which can be made in Europe, and we can, with training and practice, make it as well. To do this, however, it is essential that our native population shall be able to get the kind of training that is within reach in foreign countries; and to this end, the creation and maintenance of first-rate technical schools are necessary. Philadelphia has started such a school, and particular reference will be made to it further on.

The year 1884 was marked by some labor troubles following upon decrease of wages, but, up to the end of the year, these had not assumed formidable proportions in any department of textile manufactures. The mass of the operatives, with that good sense which is characteristic of American workmen, seemed disposed to recognize the necessity for such decrease, and to accept it with all possible cheerfulness.

Much more painful was the suffering which followed, in some districts, upon the shutting down of mills, and upon the reduction of the number of persons employed in the mills. Notably in Manayunk these causes produced much misery. Several large mills in that place were closed because of the dullness of business, and for other and peculiar reasons, with the result that several thousand worthy persons, (the precise number is not known,) were reduced to penury, and but for the action of relief associations, which were quickly formed, would have been subjected to starvation. The situation in Manayunk was exceptional, in so far as it showed large masses of sufferers congregated in one place; but no doubt there has been a great amount of individual suffering in the city and State, because of the compulsory idleness of men and women who, although able and willing to work, have been unable to find work to do. For this no remedy can be suggested and no blame can be placed. The causes are apparently as much

beyond human reach as they are when epidemic disease appears, to inflict suffering in other forms.

Textile Machinery.

The capital invested in the construction of textile machinery in Philadelphia is distributed among two or three large corporations and a number of private firms. The former rank, in capacity and excellence of product, with the foremost producers of textile machinery in the country. The latter include concerns which range from those that rival in dimensions of plant and product the largest corporations, down to establishments which make a few knitting-machines each month. The product includes every kind of device for preparing raw material, for carding, combing, and spinning fibers, for dyeing, sizing, printing and finishing yarns and fabrics, for weaving fabrics, and for all the various processes through which goods are carried from the loom to the cases in which they are shipped. Machinery is made for the manufacture of cotton, wool, silk, worsted, and jute; and for knitting purposes of all kinds. There are eighteen or twenty establishments in which knitting machinery is made, being about one third of the whole number in the United States.

None of the manufacturers of ordinary textile machinery were very busy during the year. Some of them ran with only a part of their force. Those who produce patented specialties of marked value did what may be regarded as a fair business; but the total product of the year, in regular machinery, was much below the average.

The manufacturers of knitting machinery of neary every kind, however, formed an exception to the rule. Those that make machinery for the knitting of Jersey cloths and stockinets were particularly fortunate, being compelled in some cases, notably in the closing months of the year, to work over-time to meet the demand for their wares. A similar good fortune attended many of the makers of machines for doing fancy knitted work; but even the manufacturers of machines for the lower grades of knitted fabrics found little difficulty in doing a good business.

Knit Goods.

The knitting industry in Philadelphia (employing about one hundred and seventy-five establishments) encountered a singular piece of good fortune two or three years ago. A new fabric was produced upon the machinery. This fabric, which, in its lighter form, is known as Jersey cloth, and in its heavier form as stockinet, acquired immediate popularity. The Jersey cloth is elastic, durable, capable of a high finish and eminently suitable for women's wear, because of the readiness with which it adapts itself to the form. The stockinet cloth is made with a smooth surface and a soft, woolly back, and is an admirable and beautiful material from which to make cloaks and coats for women and children. The favor which these fabrics have found among the people induced many manufacturers to abandon the pro-

duction of other forms of knit-goods; and while these persons have made excellent profits from their business, their withdrawal from the market for ordinary knit-goods gave the manufacturers of the latter relief from just that amount of competition. The dull times have interfered to make this advantage less profitable than it otherwise would have been, but there is no doubt that, but for the diversion, (which probably took off one third of those engaged in making cotton hose,) the knitting industry would have suffered very much more than it has done. In fact, we may estimate the importance of the diversion from the circumstance that the manufacture of knit underwear, which is carried on to a very limited extent in Philadelphia, was probably the department of the business which was most unprofitable last year; while those branches that are pursued most generally in this city, where the Jersey manufacture is centered, did a fairly good business.

The fabrics chiefly produced upon knitting machines in Philadelphia are cotton stockings, (the largest product of all,) cardigan jackets, shawls, scarfs, nubias, and gloves. Silk is knit, to some extent, into mittens, wristlets, and stockings; but this is yet a comparatively small industry. All of these branches profited more or less by the sudden introduction of the Jersey fabrication; and the fact supplies still another striking illustration of the truth that the best method of bringing relief from over-production, so-called, is to increase the diversification of industrial pursuits, advancing always from the lower to the higher.

For a time it was thought that the knitting of Jersey and stockinet cloths was but a response to a freak of fashion which would soon pass away; but this has been proved to be an erroneous belief. The qualities of these fabrics are so excellent that they are likely to retain the favor of the public for years to come, even if they shall not have perpetual popularity.

Worsteds, Woolens, &c.

One of the most prosperous of the textile industries in Philadelphia last year was the business of spinning worsted yarns. During the year, three or four new mills, equipped with the most improved machinery, were constructed, and some of the mills already in existence added to their buildings and to their machinery. Besides these, at least one mill in Camden, New Jersey, owned and controlled in Philadelphia, was much enlarged in construction and plant. It is estimated that the product of these mills approximates twelve million dollars annually, the yarns being consumed in coatings, Jerseys, and other knit fabrics, carpets, braids, women's dress goods, &c. Some of the mills make yarns only, while others ordinarily consume the bulk of their own product. For the yarns, the demand has been large and constant, chiefly because of the popularity of the Jersey and stockinet fabrics. Nearly all of the mills making yarns had prosperity during the year; but those that are equipped with machinery for turning the yarn into woven fabrics suffered from an interpretation put upon the tariff by

the Treasury Department, at Washington, which strongly favors foreign manufacturers. The foreign goods, under the Treasury decision, are brought here in large quantities, undyed and unfinished, (in the gray,) so that their less value in that condition will give them the benefit of the low *ad valorem* rate, and then are dyed and finished here. This practice has stopped hundreds of worsted looms, and done much harm. The American manufacturers hold that the decision of the Treasury is unjust and unwarranted by the letter of the law, and protests have been made against it, with what result remains to be seen.

In this connection it is to be noted that there has been a movement among some of the larger mills for the manufacture here of fine dress goods of worsted for women. The great mass of these fabrics, which are consumed in large quantities, are now imported. There is no doubt that they can be made here so as to equal the finest imported goods in texture, design, color, and finish; and their manufacture here is much to be desired as having a tendency to promote that diversity of industry which is always beneficial to a nation.

The business of spinning woolen yarns, and cotton yarns in imitation of woolens, occupies a large number of mills, many of which consume their own product, putting the yarns into carpets, blankets, &c., and others producing such yarns for knitting purposes. This industry suffered from the general depression, but most of the mills remained in operation, selling at low prices and keeping their trade.

Cotton Goods.

The year 1884 was a particularly gloomy one for the manufacturers of ordinary cotton goods in and about Philadelphia. This city has long been the center of a vast manufacture of checks, shirtings, tickings, prints, cottonades, coverlets, towels, and of fabrics composed of cotton with a slight intermixture of wool. The number of establishments within the boundaries of the city alone makes a close approach to two hundred and fifty. It is safe to say that no progress was made in this branch of the industry during the year. There were some complete stoppages of large mills, and in some of the mills which continued in operation only a part of the machinery was run. The market was sluggish, prices were low, and the manufacturers who continued encountered discouragement in a variety of forms.

But still it must be understood that the quantity of fabrics actually produced, sold, and used by the people was very large—possibly almost as large as in former periods. The demand for certain lines of these goods —tickings, for example—is not likely ever to decrease permanently; it is far more likely to increase, and the only question to consider is whether the supply may not increase more rapidly than the demand. For printed calicoes, also, there will always be a market. Of late years, cheap woolen goods have been substituted for these, to some extent; but there are certain makes of prints which always obtain good prices, and for which the

inquiry is steadfast and always to be depended on. It is the inferior grades which encounter growing disfavor. The menace to the cotton goods trade always is, first, the temptations offered to men who aspire to become manufacturers to enter the department of the business which requires less skill than some others; and, second, the tendency of the men who are in it to depreciate qualities so that they can cut prices; and to these may be added the appearance of the Southern mills as competitors for the trade of the South and West.

There is, however, no good reason for doubting that, with the return of general prosperity, this business will have its share of success, and that its gross out-put will be disposed of readily at fair prices. Its greatest need would seem to be the diversion of some of the best of the mills to the production of fabrics of a higher grade than those that have heretofore been made largely in this vicinity.

Dyeing and Finishing.

The dyeing and finishing establishments of Philadelphia (not heretofore considered in these reports) bear a very important relation to the textile industries. Several of these are of large dimensions, employing hundreds of thousands of dollars of capital each, and using the services of hundreds of workmen. In them, yarns and fabrics are bleached and dyed, and fabrics are dyed and subjected to the various processes included in the term "finishing." They perform this work for goods that are brought here from all parts of the country and from abroad. Millions of yards of stuffs are sent to them annually from New England, and they do the completing work upon great quantities of foreign fabrics, such as dress goods, coatings, cloths, umbrella stuffs, &c., that are brought here from abroad in an unfinished state, to avoid payment of the higher duties.

It is safe to say that these establishments are not surpassed in equipment, or in the excellence of their workmanship, by any others upon this continent, and it is gratifying to report that all, or nearly all, of them had abundant employment during the year. The work done by them upon the Jersey fabrics alone formed a not inconsiderable portion of their business.

Carpets.

Carpet manufacture is the largest of all the branches of textile industry in Philadelphia. It engages nearly three hundred and fifty factories, and gives employment to more than twelve thousand persons, male and female. The product includes every variety of carpet, from the lowest grade to the highest and finest. These fabrics are not surpassed anywhere in the world for excellence of texture, for coloring, beauty of design, general finish, and durability. They include ingrains, tapestry Brussels, "body" Brussels, Moquettes, Wiltons, Axminsters, and velvets, with Smyrna and other rugs, whole carpets of Persian patterns, and also Turcomans and other stuffs suitable for hangings and furniture coverings. The Brussels carpet manufacture is the largest part of this industry, the production of ingrains

probably coming next. It is estimated that the whole number of looms in the city, upon all grades, is about six thousand seven hundred, with a product, annually, of thirty-eight million square yards, valued at more than twenty million dollars.

The year 1884 was a trying one for this great industry, and distinctively new enterprises were very few. There were some new establishments organized for the manufacture of ingrains, and there was a slight increase of producing power in other directions, but there was no such growth in any direction as has characterized the industry in recent preceding years.

Brussels and tapestry carpets declined considerably in price during the year, Brussels especially suffering because of the larger admission of cheap English carpets under the new scale of duties arranged by the Tariff Commission. The better grades of ingrains also declined in price; while the imports of Brussels carpets were in excess of those of former years; but, upon the whole, our manufacturers have not suffered very much from foreign competition, because the business is well organized here. The public like American carpets, and a foreign name has no charm for the buyer where the domestic article has clearly apparent advantages in style and coloring.

Following the decline in prices, consequent chiefly upon the slackened demand caused by the dull times, wages were reduced somewhat in most of the mills, the reduction ranging from seven and a half to ten per cent. The close of the year found the business generally in a fairly good condition with reasonable prospects of better things. The record of failures of carpet manufacturers was short, and it is believed that not one Philadelphia carpet-mill stopped work because of financial embarrassment.

In the latter part of November, the manufacturers of ingrains upon power-looms made an attempt to reduce the wages of their weavers, the pretext being that the mills in New England were paying less than the mills in Philadelphia. This reduction was resisted, and the mill operatives began a strike, which lasted far into the ensuing year. The feelings engendered were of so bitter a kind that serious consequences more than once were apprehended, and at this writing no conclusion has been reached. The number of persons thrown out of employment was very large, and the amount of money lost by them in wages runs into hundreds of thousands of dollars. The loss of product, of course, is far greater. This movement has had wide publicity, and no doubt many persons here believed that it affected the whole carpet industry. Such is not the case. It was confined to one branch of the industry, the other branches not feeling the effects of it in any marked degree.

Child-Labor.

Child-labor is employed in the textile mills in and about Philadelphia, but by no means to so great an extent as in other parts of the country. A year or two ago, the Philadelphia Society for the Prevention of Cruelty to Children (an organization deserving the highest confidence and the

largest encouragement) undertook to inquire respecting the condition of the children working in our mills. The manufacturers, with few exceptions, encouraged the investigation and expressed a willingness to promote the correction of any evils which might be found attached to the system.

The result of the inquiry was what seemed to be a demonstration that there were no hardships belonging to the system other than those which inevitably follow upon the employment at daily labor of human beings at a time of life when study and play alone should engage their attention. The testimony was abundant that where children of too tender years were employed in the mills, the fact was due to the pressure put upon employés by parents who were anxious to have their children earn something, rather than to the wish of the manufacturers to use such labor in their mills. The agents of the society will probably be found willing to testify to the truth that humane feelings concerning this matter are general among manufacturers, and that there are few of this class who are indifferent to the natural rights of the children employed by them.

Textile Schools.

Probably the most important occurrence of the year, in connection with the textile interests of this city and State, was the organization, in Philadelphia, of a school for instruction in certain branches of textile manufacture. While Germany, France, and England have technical schools, which are equipped with the best machinery and the most accomplished teachers for training pupils in the textile arts, there is no really first-rate school in this country. Boston has made, in this behalf, a movement which is likely, ultimately, to be productive of good results, and a few enterprising manufacturers in Philadelphia have long been trying to provide at least the nucleus of a good institution here. The obstacle to success was the difficulty of securing funds—an obstacle which became more formidable as the depression in trade increased.

During the year, however, an arrangement was perfected by which the money that had been collected, although insufficient to provide an independent establishment, was used to attach a textile department to the School of Industrial Art, of the Pennsylvania Museum, an institution already existing upon a good foundation.

The entire institution was quartered in a suitable building, No. 1336 Spring Garden street, and the textile branch is now in successful operation.

Thus far, the students have been confined to instruction in the arts belonging to the arts of weaving. The class, composed just now of adults, meets upon three evenings in the week. The intention is to form a day class, for the instruction of younger persons. The students are taught how to dissect and analyze all kinds of fabrics, and how to construct patterns for the loom, to weigh yarns, and to estimate the cost of making all grades of goods. Much attention is also given to the study of color, lectures on

which, illustrated by charts and experiments, are given at regular intervals by the principal of the school. It will be seen that the instruction given is of just the kind that is needed by workmen to advance them in their craft, besides the obvious advantages derived from association with a school for general art-work, where drawing and designing, in all their branches and forms of application, are taught, and where constant reference may be made to the most approved work of all periods and all styles.

The students make a scientific detailed study of the loom, to learn what are its possibilities, and to familiarize themselves with its structure. The equipment of the school, last year, included two pattern hand-looms, duplicates of those used in the Yorkshire College, Leeds, England; two pattern hand-looms, duplicates of those in use in the Bradford Technical School, Bradford, England; a Jacquard loom, and looms presented by Mr. George Crompton and the Knowles loom works, both of Worcester, Massachusetts, and both famous makers.

The school is under the direction of Mr. Leslie W. Miller; and Mr. Theodore C. Search, of Erben, Search & Co., worsted manufacturers, a man of marked ability and intelligence, is chairman of the committee on instruction in the textile department.

It should be added that the Woman's School of Design, on North Broad street, under the direction of Miss Croasdale, also introduced, during the year, a system of instruction in the art of designing for the loom; and it was the recipient of a very superior loom, presented by the well-known Bridesburg Manufacturing Company of Philadelphia. This school confines itself to the work of teaching the art of design.

The school on Spring Garden street will, no doubt, in time, include in its course intruction in dyeing, and the general application of chemistry to the textile arts; and also, probably, instruction in other and kindred branches.

The value and importance of such institutions in this, the greatest textile center upon the Continent, need no demonstration. They supply to the one hundred thousand young men and women who attend our public schools some sort of an opportunity to acquire such exact training for work in our mills as will enable some of them to earn good pay, and will confer an inestimable benefit upon manufacturers, who now are dependent almost wholly upon Europe for their supply of expert labor. The opinion may confidently be expressed that public money could not be more effectively expended by city and State governments than in the grant of enlarged annual subsidies to these institutions.

Every man who is engaged in manufactures knows that we are fast approaching a time when the difference between success and comparative failure will lie in the strict economy of materials, the use of the highest scientific methods, and the employment of workmen who know exactly how to do a thing, and who guess at none of the processes. A highly-trained designer, with educated taste and a precise hand, is worth a dozen men who

can only copy foreign patterns or make one good design after a score of failures. A dyer who is a first-rate chemist will save his wages many times over in economical use of material and in the certainty with which he reaches his effects. Even in the spinning and weaving departments of the mill, a workman who is well grounded in theory, as well as in practice, and who has studied under the microscope the fibers which he handles every day, will be far more valuable, even at higher wages, than the workman who has picked up, while hanging about the mill, all that he knows. The man who knows exactly *how* to do a thing, and who also knows *why* it is to be done in just such a way, is the man who will always be likely to reach the best results. American cotton, turned into beautiful Alsatian sateens, is worth so much more than it is in the form of calico, because Alsace is full of artisans who have been trained in superb industrial schools. France sets the fashions for the world, not only because the French have naturally refined and elegant taste, but because France has good schools in which its designers and other workers learn how to use their powers to the best advantage.

The demand for the establishment of such training schools in this country is becoming more and more urgent, and it must increase in force as our industries grow and multiply. Americans are as capable as any other people of developing the abilities necessary for doing superior work in all of the arts. What they want is a chance for the young persons who have talent. It would be high good policy for great industrial communities in the United States to make industrial training possible under the common-school system.

It may not be inappropriate to close this article with the assertion that the great industry here referred to requires for its successful pursuance the continued shelter of the protective tariff; and this fact may be stated with especial emphasis just now, when both the foreign and the domestic enemies of the protective system are organizing their forces in a spirit of aggressiveness which should be carefully observed by the friends of American industry. The first duty of a government is to do what it can to secure employment for all classes of its people; to develop all the natural resources of the country; to protect the people from destructive foreign competition, and to try to diversify the national industries to the largest extent, so as to give all talents a chance, and to make as near an approach as can be made to industrial independence. The policy which promises to keep everybody busy, in ordinary times, at fair wages, is wiser than the policy which promises to make everything cheap, whether there are wages paid or not. Nothing is cheap to a people who have not wherewith to buy. The prosperity of a people is far more important than the cheapening of the things which that people consumes. The price of a thing can only be relatively high or low. Flour at ten cents a barrel is dear to a man who can only make one cent a day in wages. Flour at five dollars a barrel is cheap if a common workman can make twenty dollars a week in wages.

The important thing is not so much the price of the article as the amount of earnings of the worker. The British silk-weaver, now out of work and hungry, does not find his stomach filled with the reflection that wealthy people in London are getting bargains in French silks, made by men who have broken up the English silk manufacture. And Americans may make up their minds that our millions of working men and women, if free trade shall ever close our mills, will obtain little consolation, in their idleness and want, from the fact that a few other Americans, situated more happily, have to pay less for their clothing.

TEXTILE FABRICS.

Table showing the number of mills, production, &c., of textile fabrics in the several counties for the year ending December 31, 1884.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of spindles.	Number of looms.	Value of product.
Carders and Fullers.							
Chester,	1	300	6	$1,750			$25,000
Perry,	1	120	1	Shares.			120
	2	210	7	$1,750			$25,120
Carpets.							
Berks,	1	205	10	$1,800	240	1	$6,400
Bucks,	1	183	9	1,100		7	2,375
Chester,	1	300	5	1,500	220		10,800
Clarion,	1	180	4	200	80	2	500
Dauphin,	1	300	4	800	1	1	2,000
Delaware,	1	286	12	5,792		4	37,179
Lancaster,	1	200	4	2,800			10,000
Philadelphia,	133	266	8,179	2,906,484	25,667	6,405	13,558,289
	140	240	8,226	$2,920,476	26,208	6,420	$14,627,543
Clothing.							
Philadelphia,	27	298	5,877	$2,292,761			$10,161,294
Corsets.							
Philadelphia,	3	301	110	$23,350			$105,295
Cotton Goods.							
Allegheny,	3	197	701	$74,656	20,256	447	$325,004
Berks,	1	204	228	35,043	15,800	300	140,172
Chester,	1	300	65	25,000	1,440	60	96,000
Dauphin,	1	175	230	25,560	8,000	281	103,000
Delaware,	12	242	1,652	425,312	78,532	2,156	1,525,550
Lancaster,	5	289	1,205	329,344	41,604	1,062	1,284,248
Montgomery,	5	238	620	160,325	18,920	542	769,608
Northampton,	2	268	225	40,000	9,000	300	200,000
Philadelphia,	51	256	5,219	1,573,003	90,915	7,588	6,127,561
	81	271	10,145	$2,688,243	284,467	12,736	$10,571,143
Cotton and Woolen Goods.							
Berks,	2	261	122	$37,448	2,224	100	$154,928
Delaware,	7	280	741	205,285	24,934	790	802,317
Philadelphia,	22	266	2,986	923,339	27,635	3,592	3,900,271
	31	269	3,849	$1,166,072	54,793	4,482	$4,857,516
Coverlets.							
Lancaster,	1	304	10	$1,800		6	$10,000
Philadelphia,	8	291	26	71,327	9	219	369,519
	9	297	36	$73,127	9	225	$379,519
Felt Goods.							
Philadelphia,	3	238	50	$23,560		3	$127,707

TEXTILE FABRICS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of spindles.	Number of looms.	Value of product.
Hosiery and Knit Goods.							
Bucks,	2	302	395	$105,939	. . . . .	. . . .	$299,000
Delaware,	1	180	70	14,662	. . . . .	. . . .	41,763
Lancaster,	1	250	21	3,833	. . . . .	. . . .	12,000
Lehigh,	1	250	75	10,375	. .	. . . .	33,250
Luzerne,	1	250	173	34,797	960	. . . .	156,184
Montgomery,	2	300	190	16,749	. . . .	6	70,000
Philadelphia,	78	210	9,506	2,279,421	11,038	276	9,155,456
Washington,	1	120	67	6,000	. . . .	. . .	25,351
	87	233	10,497	$2,471,776	11,998	282	$9,793,004
Jeans.							
Chester,	1	300	39	$12,375	1,692	56	$58,600
Delaware,	4	289	309	87,647	2,640	192	452,398
Montgomery,	1	295	78	22,446	1,864	88	85,000
Philadelphia,	2	230	100	28,140	1,932	140	103,840
	8	278	526	$150,608	8,128	476	$699,838
Lace and Lace Goods.							
Philadelphia,	2	250	75	$3,000	. . . . .	. . . .	$19,000
Ladies' Dress Trimmings.							
Philadelphia,	5	286	97	$336,136	. . . .	. . .	$1,436,000
Mats and Rugs.							
Delaware,	1	308	25	$9,500	. . . . .	18	$30,000
Philadelphia,	4	212	83	44,228	. . . . .	137	175,363
	5	260	108	$53,728	. . . .	155	$205,363
Neck Wear.							
Philadelphia,	8	290	386	$129,027	. . . . .	. . . .	$567,500
Rubber Goods.							
Erie,	1	309	25	$11,200	. . . . .	. . . .	$112,000
Lycoming,	1	302	160	35,963	. . . . .	. . .	140,000
Philadelphia,	2	295	68	25,899	. . . . .	. . . .	249,710
	4	302	253	$73,062	. . . .	. . .	$501,710
Shawls.							
Chester,	1	300	38	$11,500	720	12	$60,000
Philadelphia,	6	299	385	141,060	. . . . .	170	681,550
	7	299	423	$152,560	720	182	$741,550
Shirts.							
Montgomery,	2	299	250	$49,250	. . . . .	. . . .	$205,000
Philadelphia,	22	287	1,909	532,542	. . . . .	. . .	1,826,638
	24	293	2,159	$581,792	. .	. . . .	$2,031,638
Shoddy.							
Delaware,	1	300	17	$5,000	. . . .	. . . .	$96,000
Philadelphia,	6	262	97	43,200	720	. . . .	311,585
	7	281	114	$48,200	720	. . . .	$407,585
Silk Goods.							
Lackawanna,	1	300	125	$25,000	. . . . .	. . . .	$100,000
Lehigh,	1	300	475	80,000	30,000	184	300,000
Philadelphia,	3	299	394	116,200	6,750	120	359,600
Wayne,	2	300	350	60,000	25,000	100	250,000
	7	300	1,344	$281,200	61,750	404	$1,009,600

TEXTILE FABRICS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of spindles.	Number of looms.	Value of product.
Tape, Braid, &c.							
Philadelphia,	8	301	438	$112,100		492	$451,500
Turkish Towels.							
Philadelphia,	5	297	187	$64,438		229	$324,141
Upholstery Goods.							
Philadelphia,	23	278	1,993	$600,054	1,024	464	$2,265,735
Window Shades and Curtains.							
Philadelphia,	11	251	269	$64,092		124	$333,071
Woolen Goods.							
Adams,	1	300	6	$1,000	180	3	$5,000
Allegheny,	1	196	50	10,961	2,750	16	50,000
Armstrong,	2	142	51	9,330	1,312	24	58,700
Beaver,	1	150	8	1,200	240	4	8,000
Bedford,	4	267	35	6,250	804	18	31,845
Berks,	2	238	64	13,189	1,542	36	91,535
Blair,	1	90	1				119
Bradford,	2	222	12	2,400	592	10	9,125
Bucks,	1	300	215	90,000	4,200	65	400,000
Butler,	3	214	37	8,700	1,292	19	45,000
Cambria,	3	260	247	67,549	4,804	83	354,237
Chester,	2	250	44	9,818	1,184	40	52,052
Clarion,	2	225	17	3,500	356	9	20,550
Clearfield,	1	270	7	1,300	220	5	6,000
Clinton,	1	300	6	2,240	312	6	15,000
Columbia,	2	157	13	600	560	7	9,200
Crawford,	2	225	14	4,000	440	8	11,000
Cumberland,	3	285	14	2,838	542	13	11,800
Dauphin,	1	300	9	2,100	216	7	11,100
Delaware,	4	306	609	113,380	2,956	174	294,340
Erie,	2	202	13	2,875	440	6	19,000
Fayette,	1	200	3		150	3	500
Franklin,	4	216	103	19,465	2,192	35	92,429
Fulton,	1	200	3	600	160	2	2,000
Greene,	1	200	6	2,000	156	2	3,000
Huntingdon,	2	275	13	2,000	474	11	12,000
Indiana,	1	285	12	3,000	240	5	10,000
Jefferson,	1	200	10	2,350	286	5	14,000
Lackawanna,	1	250	8	500	240	3	5,000
Lancaster,	2	299	9	1,480	234	5	6,982
Lehigh,	1	300	3	500	240	5	3,650
Luzerne,	1	200	6	800	192	4	3,000
Lycoming,	2	245	63	13,200	2,044	16	100,000
Mifflin,	3	237	28	5,125	1,400	20	40,000
Monroe,	1	300	105	34,700	1,646	29	166,700
Montgomery,	3	278	152	35,450	2,672	160	177,000
Perry,	2	217	7	860	328	7	5,950
Philadelphia,	23	208	4,336	1,321,628	45,931	1,358	6,160,512
Schuylkill,	1	250	3		160	3	1,000
Somerset,	3	258	23	5,115	582	12	23,050
Sullivan,	1	182	6	1,365	240	2	2,600
Susquehanna,	1	250	5	756	240	5	5,000
Tioga,	1	250	4	80	220	3	1,400
Union,	2	255	41	13,596	3,440	21	83,000
Venango,	1	250	11	2,400	180	4	9,200
Wayne,	2	250	50	11,800	900	12	52,000
Westmoreland,	1	208	8	1,825	240	5	6,700
York,	4	225	34	5,530	1,374	15	26,325
	108	250	6,662	$1,890,015	93,379	2,338	$8,773,678

TEXTILE FABRICS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of spindles.	Number of looms.	Value of product.
Worsted Goods.							
Delaware,	1	312	120	$24,000	2,160	137	$99,134
Montgomery,	3	289	552	186,000	12,840	153	1,323,974
Philadelphia,	11	289	1,728	486,938	10,372	500	1,990,858
	15	296	2,400	$696,938	25,372	790	$3,413,966
Yarns.							
Armstrong,	1	50	2	$40	160	. . .	$550
Bradford,	1	200	14	2,500	210	3	10,000
Bucks,	2	216	325	88,545	5,500	. . . .	801,499
Centre,	2	200	19	4,100	600	13	18,000
Delaware,	11	237	837	214,359	45,543	. . .	1,333,506
Fulton,	1	300	2	350	40	2	2,000
Indiana,	1	170	10	2,300	312	. . .	12,000
Jefferson,	1	200	10	1,100	440	5	6,500
Juniata,	1	275	3	175	212	4	1,200
Lancaster,	4	251	86	24,100	6,738	1	115,050
Lawrence,	1	240	6	1,300	270	. . .	7,000
Luzerne,	1	300	6	690	312	3	4,200
Lycoming,	1	180	9	1,800	288	5	7,700
Mercer,	2	210	7	1,100	312	2	3.500
Montgomery,	1	240	160	39,900	15,336	80	108,425
Philadelphia,	67	255	4,935	1,411,301	172,985	67	9,376,264
Potter,	1	150	4	150	144	2	2,045
Somerset,	1	300	7	1,260	268	2	6,500
Susquehanna,	1	210	6	150	240	4	1,000
Washington,	1	250	5	550	160	4	8,890
Wayne,	1	200	7	700	360	3	2,100
Westmoreland,	1	150	1	138	120	2	600
	104	217	6,461	$1,796,608	95,550	202	$11,828,529

TEXTILE FABRICS—Recapitulation.

INDUSTRIES.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Carders and fullers,	2	210	7	$1,750	$25,120
Carpets,	140	240	8,226	2,920,476	14,627,543
Clothing,	27	298	5,877	2,292,761	10,161,294
Corsets,	3	301	110	23,350	105,295
Cotton goods,	81	271	10,145	2,688,243	10,571,143
Cotton and woolen goods,	31	269	3,849	1,166,072	4,857,516
Coverlets,	9	237	36	73,127	379,519
Felt goods,	3	238	50	23,560	127,707
Hosiery and knit goods,	87	233	10,497	2,471,766	9,793,004
Jeans,	8	278	526	150,608	699,838
Lace and lace goods,	2	250	75	3,000	19,000
Ladies' dress trimmings,	5	286	973	336,136	1,436,000
Mats and rugs,	5	260	108	53,728	205,363
Neckwear,	8	290	386	129,027	567,500
Rubber goods,	4	302	253	73,062	501,710
Shawls,	7	299	423	152,560	741,550
Shirts,	24	293	2,159	581,792	2,031,638
Shoddy,	7	281	114	48,200	407,585
Silk goods,	7	300	1,344	281,200	1,009,600
Tape, braid, &c.,	8	301	438	112,100	451,500
Turkish towels,	5	297	187	64,438	324,141
Upholstery goods,	23	278	1,993	600,054	2,265,735
Window-shades and curtains,	11	251	269	64,092	333,071
Woolen goods,	108	250	6,662	1,890,015	8,773,678
Worsted goods,	15	296	2,400	696,938	3,413,966
Yarns,	104	217	6,461	1,796,608	11,828,529
Total for 1884,	734	261	63,568	$18,694,673	$85,657,535

PRINTING AND PUBLISHING.

In the matter of statistical information relative to the business of printing and publishing, as carried on this State, no thorough and reliable data has ever emanated from this Bureau. During the next coming year, we hope to be able to furnish such statistical information as will show the increase or decrease in the number of establishments and employés, together with the rates of wages, amount of capital invested, and value of product, compared with that of the census year of 1880. It is not our purpose to prepare a treatise on the art of printing, but we may be pardoned for dwelling with particular emphasis on the proud position occupied by Pennsylvania relative to an art which takes precedence in all things temporal. According to the returns made to the Census Bureau at Washington, for the year 1880, there were, at that time, 8,048 printing-presses owned and used in the United States. Of this number, 4,873 were hand-power, 148 water-power, and 3,027 steam-power.

These figures relate to newspapers and periodicals only, and we have been unable to find any statement giving the total number of printing-presses in use in all the printing establishments in the United States.

Of the number of presses here given, 629 are set down as being in use in Pennsylvania.

In the division of motive power there were of hand-power presses 329, of water-power 20, and of steam-power 280. Assuming that these figures are correct, it will appear that the number of printing-presses in use in Pennsylvania was a little more than one thirteenth of the number in use in the United States.

With the single exception of New York State, which has about one tenth of the total number of presses in use in the country, Pennsylvania ranks first in the number of printing-presses in use, and it may be said here incidentally that the first printing-press known to have been manufactured in this country was made for one Christopher Sower, junior, a printer in Germantown, Pennsylvania, in 1750.

Previous to the beginning of the present century, all the printing-presses were made almost entirely of wood, and most of them were imported. To Adam Ramage, of Philadelphia, belongs the credit of perfecting the presses at that time in use to such a degree as to lead to the almost entire cessation of importations of foreign-made presses, as early as the year 1800. About the year 1817, George Clymer, of Philadelphia, invented the Columbia press, made in all of its principal parts of iron—hundreds of which, with important later improvements, are yet in use throughout the country.

The number of pounds of paper used in the manufacture of newspapers and periodicals in 1880 was 189,145,048, and of this amount 28,026,402

pounds were used in Pennsylvania. We learn that prior to the year 1700 paper was wholly imported.

The first paper-mill in the Colonies was built in the year 1690 by William Rittenhouse, at Germantown, Pennsylvania, with the assistance of William Bradford, then the only printer in the Colonies southward or westward of New England.

Ten years later this little mill was carried away by a freshet, and the stone mill erected in its stead soon after continued to manufacture paper until 1798, under the auspices of the same family.

We have noted that to Pennsylvania belongs the credit and the honor of manufacturing the first printing-press made in the Colonies, also for having built the first paper-mill, and now we have to note that to her belongs the additional credit and honor of having, through the instrumentality of Christopher Sower, junior, of Germantown, Pennsylvania, established the first regular type-foundry in the Colonies. This was in 1772, at Germantown. The materials for this foundry were imported from Germany, as well as a workman to make use of them.

The first font cast here was a German pica for the printing of a Bible. About three years later, another type-foundry was established at Germantown by Jacob Bey, who had been a workman in the foundry of Christopher Sower. The type-foundry established in 1775, by Benjamin Franklin, at Philadelphia, was the third and last type foundry established in the Colonies until after the close of the Revolutionary war. It was not until 1798, however, that type-founding, as a business, became a success through the efforts of Messrs. Binney & Ronaldson, of Philadelphia—and they, too, must have succumbed had not the State of Pennsylvania come to their aid by a generous and timely donation of $5,000.

We here present a table of the type-founding business of the United States and of Pennsylvania as it existed in 1880, and accompanying tables on stereotyping and electrotyping, lithographing, and the manufacture of printing materials.

These tables will show the proportion of establishments, capital invested, &c., in Pennsylvania to all the States and territories of the Union, as well as show the wonderful progress made since the time Christopher Sower, junior, began the manufaeture of type in 1772:

	No. of establishments.	Capital invested.	Number of employees.	Annual wages paid.	Value of material.	Value of product.
Type Founding.						
United States,	48	$2,772,690	1,906	$958,693	$660,748	$2,330,298
Pennsylvania,	4	$810,000	306	$146,694	$89,400	$417,132
Stereotyping and Electrotyping.						
United States,	45	$536,000	642	$312,208	$200,491	$724,689
Pennsylvania,	5	$226,000	191	$104,982	$51,050	$223,500
Lithographing.						
United States,	167	$4,501,825	4,322	$2,307,302	$2,755,264	$6,912,338
Pennsylvania,	24	$659,550	607	$269,011	$259,627	$765,003
Printing Materials.						
United States,	27	$199,900	197	$98,878	$190,353	$421,316
Pennsylvania,	5	$45,200	43	$22,470	$18,298	$52,366

The incentive given to printing and publishing by the exertions of men like Sower, Bradford, and Ramage was the fruitful parent of a business which to-day assumes wonderful and astonishing proportions. In order that we may the more fully appreciate this fact, we quote the language of Benjamin Franklin, and compare the condition of the printing and publishing business in his day with the condition of the printing and publishing business of our day. Benjamin Franklin said: "At the time I established myself in Philadelphia (1723,) there was not a good bookseller's shop in any of the Colonies to the South-ward of Boston. In New York and Philadelphia the printers were indeed stationers, but they sold only paper, almanacs, ballads and a few common-school books. Those who loved reading were obliged to send for their books to England." Such was the condition of affairs in 1723. Now let a comparison be made with the census figures in 1880. An examination of the statistics shows such a vast increase over the days of Franklin that we present the results in carefully prepared tables on the opposite page:

Table of statistics, showing the number of copies and number of publications of newspapers and periodicals in the census year 1880, in the United States and Pennsylvania.

AGGREGATE NUMBER OF COPIES PRINTED.	Dailies.	Weeklies connected with dailies.	Weeklies not connected with dailies, and all other than monthlies.	Monthlies.	Amount paid annually in wages.	*a*. Number of employees.
Total for United States, ... 2,067,848,209	1,100,607,219	202,244,024	663,543,866	94,853,100	$28,559,336	55,015
Total for Pennsylvania, ... 297,559,892	182,410,996	17,498,312	78,472,237	19,178,347	$2,913,162	5,608

AGGREGATE NUMBER OF COPIES PRINTED.	Gross value of annual product.	Total receipts from subscribers.	Total receipts from advertising.	Number of daily, weekly, and all other periodicals published.	Number of pounds of paper used.
Total for United States, ...	$89,009,074	$49,872,768	$39,136,306	11,314	189,145,048
Total for Pennsylvania, ...	$9,319,497	$5,100,727	$4,218,770	973	28,026,402

a There were editors employed to the number of 16,600, but as many of them were engaged in other work connected with the printing establishment, and as the number thus engaged could not be accurately determined, it was thought best to not add the number of editors to the number of employees; therefore, the table of employees does not include those engaged in editorial labor.

In the number of newspapers published in the United States, there were 553 devoted to religion, and of this number 75 were published in Pennsylvania. Of the daily publications, 880 were quoted as English, 88 of which were credited to Pennsylvania. The number of publications other than dailies published in English were 9,635, of which number 796 were published in Pennsylvania. There were 80 German dailies, and 561 German weeklies, 10 of these dailies and 77 of the weeklies were published in Pennsylvania.

To show the increase of newspapers and periodical publications in Pennsylvania, we present the following:

	Year.	*No.*
Total number of newspapers and other periodicals published, .	1810	71
Total number of newspapers and other periodicals published, .	1840	187
Total number of newspapers and other periodicals published, .	1850	310
Total number of newspapers and other periodicals published, .	1860	367
Total number of newspapers and other periodicals published, .	1870	540
Total number of newspapers and other periodicals published, .	1880	973

The first paper published in Pennsylvania was the *American Weekly Mercury*, printed in Philadelphia in 1719 by Andrew Bradford. As a chronological history, giving the date of the first publication of newspapers and periodicals in Pennsylvania, by counties, may prove interesting, we submit a table prepared from the United States census.

	Date of First Publication.	Name of Publication.	Where Published.	Name of Publishers.
Allegheny,	July 29, 1786	Pittsburgh Gazette,	Pittsburgh,	J. Scull & Hall.
Bedford,	1805	Bedford Gazette,	Bedford,	Name not given.
Berks,	February 18, 1789	Neue-Unpartheyische Zeitung,	Reading,	Johnson, Barton & Yungman.
Blair,	August 9 1883	Aurora,	Hollidaysburg,	T. P. Campbell.
Bucks,	July 25, 1800	Farmers' Weekly Gazette,	Doylestown,	I. Ralston.
Carbon,	1830	Carbon County Gazette,	Mauch Chunk,	A. L. Foster.
Centre,	1827	Democrat,	Bellefonte,	P. Benner.
Clinton,	August, 1838	Eagle,	Lock Haven,	W. A. Kinsloe.
Columbia,	1836	Democrat,	Bloomsburg,	Name not given.
Cumberland,	1810	Weekly News,	Shippensburg,	J. L. Baker.
Dauphin,	1791	Oracle of Dauphin,	Harrisburg,	Name not given.
Delaware,	November 8, 1819	Post Boy,	Chester,	Butler & Worthington.
Erie,	1808	Mirror,	Erie,	G. Wyeth.
Franklin,	July, 1790	Western Advertiser and Chambersburg Weekly,	Chambersburg,	W. Davison.
Huntingdon,	July 4, 1797	Huntingdon Courier and Weekly Advertiser,	Huntingdon,	M. Duffey.
Lackawanna,	1838	Journal,	Carbondale,	J. B. Mix.
Lancaster,	1751	German and English paper, name not given,	Lancaster,	Miller & Holland.
Lebanon,	1814	Der Wahre Democrat und Volks Advokat,	Lebanon,	J. Hartman.
Lehigh,	1810	Der Unabhaengische Republicaner,	Allentown,	Name not given.
Luzerne,	1795	Herald of the Times,	Wilkes-Barre,	Name not given.
Lycoming,	1802	Lycoming Gazette,	Williamsport,	W. F. Buyers.
Mercer,	1811	Western Press,	Mercer,	J. Harrington.
Mifflin,	1810	Gazette,	Lewistown,	Name not given.
Monroe,	1830	Monroe Democrat,	Stroudsburg,	R. Hannum.
Montgomery,	June 14 1799	Norristown Gazette,	Norristown,	D. Sower.
Northampton,	1797 or '98	Northumberland Gazette,	Northumberland,	A. Kennedy.
Philadelphia,	December 22, 1719	American Weekly Mercury,	Philadelphia,	Andrew Bradford.
Schuylkill,	1825	Miners' Journal,	Pottsville,	B. Bannan.
Susquehanna,	February, 1816	Centinel,	Montrose,	J. Clarke.
Tioga,	1824	Pioneer,	Wellsboro',	Name not given.
Union,	1824	News-Letter,	Lewisburg,	W. Carothers.
Wayne,	1818	Wayne County Mirror,	Bethany,	Name not given.

GLASS.

Table showing the number of Glass Works, Furnaces, Pots, Production, &c., in the several counties of the State, compiled from returns to the Bureau, for the year ended December 31, 1884.

COUNTY.	Number of furnaces.	Number of pots.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of boxes of glass (50 feet).	Value of product.
Window-Glass.							
Allegheny,	13	124	124	729	$443,662	247,427	
Crawford,	1	8	270	52	38,432	24,000	
Fayette,	4	40	273	279	189,130	95,000	
Lawrence,	2	20	251	127	52,564	56,200	
Montgomery,	2	20	260	130	50,000	30,000	
Tioga,	1	8	250	43	34,170	28,000	
Washington,	1	10	260	54	41,751	31,820	
Total for 1884,	24	230	241	1,414	$847,709	512,447	
Total for 1883,	28	266	230	1,607	942,861	625,622	
Decrease since 1883,	4	36	....	193	95,152	113,175	
Flint and Green Glass.							
Allegheny,	45	480	242	4,697	$1,967,369	.....	$3,791,096
Beaver,	1	12	230	71	30,000	.....	60,500
Butler,	1	8	300	47	25,000	.....	50,000
Centre,	1	10	304	62	48,109	.....	95,833
Monroe,	1	5	260	100	47,500	.....	80,000
Philadelphia,	11	97	265	1,576	648,247	.....	1,228,454
Wayne,	6	37	230	486	179,965	....	353,565
Total for 1883,	66	649	262	6,939	$2,946,190	....	$5,659,448
Total for 1884,	62	640	240	6,660	2,392,568	.....	5,753,842
Increase over 1883,	4	9	22	279	$553,622		
Decrease over 1883,	..	....	....	....	....	..	$94,394

The number of days during which window-glass works employing a total of 729 employés, out of the grand total of 1,414, or a little more than one half, was 124 days.

In the flint and green glass works, 4,697 employés, in a total of 6,939, were employed 242 days only. There was a total of 16 window-glass works and 42 flint and green glass works reported as in operation for the year 1884.

Since the above table was prepared. we received a blank from L. Flaccus, manufacturer of flint and green glass, Allegheny county, with the following returns: Number of furnaces, 1; number of pots, 12; average number of days in operation, 200; number of persons employed, 120; amount paid in wages, $30,000; value of product, $60,000.

PETROLEUM REFINERS.

Table showing the number of Refineries, number of Stills, production, &c., in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.

Number of blank.	COUNTY.	Number of stills.	Refining capacity per day, forty-two gallons to barrel—in barrels.	Per cent. of refined oil.	Per cent. of paraffine.	Per cent. of benzine.	Per cent. of other products.	Number of barrels of oil refined per day.	Number of wooden barrels manufactured.	Number of days in operation.	Average number of persons employed.	Amount paid in wages.	Cost to produce one barrel refined oil.	Number of barrels of oil refined.	Remarks.
1577	Allegheny,	8	1,000					350		260	30	$16,664	$0 50	127,500	
1578		2	150					100		250	5	2,450	60	25,000	
1579															Sold to Standard and demolished.
1580		4	400					120		250	8	6,660	50	27,000	
1581		4	780					760		260	40	34,000	50	200,000	
1582		13	8,000					1,054	125,645	314	185	91,272	30	330,959	
		31	19,330	78		8	7	2,384	125,645	267	268	$151,046	$0 48	710,459	
1583	Beaver,	2	100					42		200	6	$4,000	$0 50	8,400	
1584		3	150					71		192	9	2,902	38	15,868	
1585		3	200					60		30	3	1,200	50	1,200	
		8	450	75	5	10	10	173		141	18	$8,102	$0 46	25,468	
1586	Butler,	1	17	75		8	13	13		300	2	$1,200	$0 90	3,900	
1587	Crawford,	30	1,917	78	4	10	8	1,126	49,685	250	125	$73,095	$0 30	352,491	
1588	Sold out to 1587.														
1589	Erie,	5	500					329		303	36	$22,495	$0 42	120,085	
1590	(See Venango,)	20	300					100		300	20	13,500	50	37,000	
		25	800	75	5	10	10	429		301	56	$35,995	$0 46	157,085	

PETROLEUM REFINERS—Continued.

Number of blank.	COUNTY.	Number of stills.	Refining capacity per day, forty-two gallons to barrel—in barrels.	Per cent. of refined oil.	Per cent. of paraffine.	Per cent. of benzine.	Per cent. of other products.	Number of barrels of oil refined per day.	Number of wooden barrels manufactured.	Number of days in operation.	Average number of persons employed.	Amount paid in wages.	Cost to produce one barrel refined oil.	Number of barrels of oil refined.	Remarks.
1592	Philadelphia,	56	8,900	. . .	. . .	. . .	. . .	4,030	504,414	298	1,597	$703,874	$0 20	1,201,027	
1593		4	200	. . .	. . .	. . .	. . .	100	20,000	300	15	8,500	30	25,000	
1594		13	3,200	. . .	. . .	. . .	. . .	21,125	. . . . .	282	290	146,929	33	595 824	
1595		5	900	. . .	. .	. . .	. . .	280	. . . . .	250	30	15,000	33	90,000	
1596		3	107	. . .		. . .	. . .	12	. . . . .	300	1	2,000	33	3,819	
		81	15,107	78	3	12	7	25,547	524,414	286	2,933	$876,302	$0 30	1,915,670	
1597	Venango,	1	30	. .	. .	. .	. .	2	. .	47	2	$175	$0 40	$600	
1598	Works at Erie and Franklin,	20	1,133	. . .	. . .	. . .	. .	1,429	13,679	300	220	127,307	30	428,743	
1599		2	100	. .	. . .		. .	47	5,558	300	10	4,790	20	14,070	
1600		12	2,000	. . .	. . .	.	. . .	084	124,362	180	175	96,262	20	249,512	
1601		2	125	. . .	. . .	. .	. . .	100	. . .	300	12	9,500	30	35,000	
		37	3,388	78	3	12	7	2,262	143,599	225	419	$238,034	$0 25	727,925	
	Total for 1884,	213	40,959	77	3	10	9	31,934	843,353	253	3,820	$1,383,775	$0 45	3,892,998	
	Total for 1883,	195	31,751	68	8	10	14	10,867	879,292	258	2,403	1,099,466	50	3,357,808	
	Increase,	18	9,208	9	.	. . .	. .	21,067	. . . .	. .	1,417	$284,309	$0 05	535,190	
	Decrease,	. .	. . .	. . .	5	. . .	5	. . . .	35,939	3					

NOTE.—Besides the barrels manufactured, there were 8,740,125 cans and cases.

EXPORTS OF PETROLEUM.

Quantities and values of petroleum and its products exported from the principal and other ports of the United States during the years ending June 30, from 1876 to 1884, inclusive.

PETROLEUM AND PRODUCTS OF—	New York.		Philadelphia.		Baltimore.		Boston.		All other ports.		Total.	
	Gallons.	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*
Mineral, crude,	10,675,183	1,218 916	8,663,564	873,592	1,178,080	127,353	. . . . .	. . . . .	3,570	407	20,520,397	2,220,268
Mineral, refined:												
Naphthas,	11,149,727	1 113,994	3.250.942	294.492	376,051	33.671	480	90	3,036	564	14,780,236	1.442,811
Illuminating,	111,505.878	16,239,022	60,770 244	7,958,189	28,728,948	3,799 190	2,110,477	380,159	1,699.126	379 078	204,814.673	28,755,638
Lubricating,	462,432	151,068	20 998	5,369	93,660	20,120	366,378	119,469	19,974	7,837	963.442	303.863
Residuum,	2,286,564	171,905	278,166	19,736	8 358	738	. . . .	. .	8,316	827	2 581,404	193,206
Total, 1876,	136.079,784	18 894,965	72,983,914	9,151,378	30,385 097	3 981,072	2,477,335	499,718	1,734,022	388,713	243,660,152	32,915,786
Mineral, crude,	21,127,100	2,988,996	4,262,093	558,101	1,111,617	171,200	. .	. . .	318,392	38,432	26 819,202	3 756 729
Mineral, refined:												
Naphthas,	10,915,337	1,363,433	3,499,300	378,412	633,105	64,224	87,093	9,145	5,348	1,468	15,140,183	1,816.682
Illuminating,	165,327.149	35,017.416	50,823.652	10,757,806	35,876.575	7,472.443	3,671,122	860,418	6,743,346	1,293,049	262,441,844	55,401,132
Lubricating,	907.456	273,481	22,269	6,143	165.206	41.421	440,644	151 823	65,490	24,672	1.601,065	497 540
Residuum,	2,592,996	259,567	466,368	43,142	75,684	6,122		. . .	61,572	8,524	3,196,620	317,355
Total, 1877,	200,870,038	39,902,893	59 073.682	11,743,604	37 862 187	7,755,410	4,198,859	1,021,386	7,194,148	1,366,145	309,198,914	61,789.438
Mineral, crude,	19,347,620	1,911.694	4,809,278	471,871	1,803,138	176,816		. . . .	976,691	133,637	26,936,727	2,694.018
Mineral, refined:												
Naphthas,	13,986.554	1,224.000	1,994,067	156,796	429,373	29,175	737	155	5,390	1,686	16 416,621	1,411 812
Illuminating,	198,134.569	29.001 711	40,795,553	5,605.117	41.740.233	5,539.865	3,841,942	654,738	4,702,244	712 245	289,214.541	41,513 676
Lubricating,	1,475.219	398.556	28 697	8 037	196,124	51,229	548,410	162,337	56,144	19.222	2 304 624	639.381
Residuum,	3,526,866	284,706	178,878	13,598	. . . . .	. .	.	. .	263,046	17,783	3,968,790	316,087
Total, 1878,	236,470,828	32,820,667	47,806,473	6.255,419	44 169,368	5.797,085	4,391,119	817,230	6,003,515	884,573	338 841,303	46,574,974
Mineral, crude,	17,716,883	1,517,701	4,687,786	377,197	1,166,825	98,292	. . . . .	. . . .	2,302,994	187,223	25,874,488	2 180,413
Mineral, refined:												
Naphthas,	11.477,029	987,145	2.729,037	207 928	600,782	42,500	52,750	4,623	194,763	16,584	15 054.361	1,258,780
Illuminating,	206 520.009	23,088 504	76,307 729	7,795 749	32,662,045	3,231,700	5,090,871	640.553	11,005,783	1,243.356	331.586,442	35,999 862
Lubricating,	1.709.556	452.257	7,182	3,367	269,759	56 249	478,998	134,903	22 186	8,092	2.487,681	655,468
Residuum,	2,684 052	173,563	144,564	7,952	216,342	12,693		. . . .	262,080	16,518	3,307,038	210,726
Total, 1879,	240,107,529	26,219,170	83,876,298	8,392,193	34 915,753	3 441,434	5,622,619	780,079	13.787,811	1,472,373	378,310,010	40,305,249
Mineral, crude,	24,034,260	1,652,200	2,730,147	160,549	. . . .	. . . . .	500	65	1,533,090	114,393	28,297,997	1,927,207
Mineral, refined:												
Naphthas,	15,257,520	996,398	2,366,622	148.464	682,702	36,200	385	93	103,815	11,074	18,411,044	1,192.229
Illuminating,	266,841,227	23,489,496	77,083,630	6,234,608	17,921,548	1,399,975	4,611,433	507,511	867,985	151,985	367,325,823	31,783,575

EXPORTS OF PETROLEUM—Continued.

PETROLEUM AND PRODUCTS OF—	New York.		Philadelphia.		Baltimore.		Boston.		All other ports.		Total.	
	Gallons.	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*
Lubricating,	4,151,597	822,388	34,943	6,980	367,240	68,713	600,837	137,378	8,218	3,665	5,162 835	1,039,124
Residuum,	3,885,588	217,677	395,094	28,161	416,430	24,000	. . .	. .	69,888	6,652	4,767,000	276,490
Total, 1880,	314,170,192	27,178,159	82,610,436	6,578,762	19.387,920	1,528,888	5,213,155	645,047	2,582,996	287,769	423,964,699	36,218,625
Mineral, crude,	34,032,428	2,661,708	5,326,528	351,736	. . . . .	. . . . .	7,156	687	618,732	51,333	39,984,844	3,065,464
Mineral, refined:												
Naphthas,	16,103,509	1,581,154	1,084,324	95,516			26,954	2,779	77,523	14,526	17,292,310	1,693,975
Illuminating,	254,300 615	26,334,965	55,076,090	5,480,763	13,881,990	1,327,989	7,808,194	962,437	1,216,156	211,541	332,283,045	34,317,695
Lubricating,	3,854,572	843,214	154 836	30,199	266,237	50,167	572,922	128,695	6,636	1,789	4 852.203	1,054,064
Residuum,	3,080,364	175,682	. . .	. . .	150,528	7,000	1,386	317	15,582	1,412	3,247,860	184,411
Total, 1881,	311.371 488	31,596,723	61,641.778	5.958,214	14 298,755	1 385,156	8,416,612	1,094,915	1,931,629	280,601	397,660,262	40,315,609
Mineral, crude,	36,326,586	2,802,955	4,454,946	288,581	. . . . .	. . . .	. . . . .	. . . . .	523,465	37,975	41,364,997	3,129,511
Mineral, refined:												
Naphthas,	16,941,538	1,515 809	3,172,703	273,848	. . .	. . .	13,860	3,081	84,997	16 405	20 213,098	1,809,143
Illuminating,	342,424.705	31,794,515	116,322 337	9,993,305	18,188,946	1,438,189	8,903,437	1,022,455	2 373,608	340,390	488,213,033	44,588,854
Lubricating,	5,249.902	1,235,846	764,363	134,443	147,997	24 522	275,122	76,282	70,716	21 303	6,508,100	1,492,396
Residuum,	3 107,328	179,709	109,410	7,258	492,828	25,500			5,796	335	3 715,362	212,802
Total, 1882,	404 050,059	37 528,834	124,823,759	10,697,435	18,829,771	1,488,211	9,192,419	1,101,818	3,058,582	416,408	559,954,590	51,232,706
Mineral, crude,	45,470,118	3,433,182	6,959,240	460,857	. . . .	. . . .	. . . .	. . . . .	282,948	20,902	52,712,306	3,914 941
Mineral, refined:												
Naphthas,	15,160,531	1,166,332	1,752,328	104,117	. .	. . . .	13,274	3,658	144 404	28,179	17,070,537	1,302,286
Illuminating,	335,183,695	29,447,160	65 212,757	5,567,659	10,983,808	871,447	6,115,060	702,599	2,325,761	337,709	419,821,081	36,926.574
Lubricating,	8,697,040	2,029,199	963,602	163,720	95,652	16,098	290,309	73,485	135,739	44,130	10.182 342	2,326,632
Residuum,	5,668,236	409,984	240,366	15,882	227,976	15,573	. . . .		8,778	1,207	6,145,356	442,646
Total, 1883,	410,179,620	36 485,857	75,128 293	6.312 235	11 307,436	903,118	6,418,643	779,742	2,897,630	432,127	505,931,622	44,913,079
Mineral, crude,	61,622,893	4,901,448	5,557,310	400,883	. . . . .	. . . . .	. . . . .	. . . . .	6,126	693	67,186,329	5,302,974
Mineral, refined:												
Naphthas,	14,059,549	999,075	854,219	49,052			9,084	1,875	122,559	22,649	15,045,411	1,072,651
Illuminating,	322,108 400	29,514,016	75,919 774	6,935,975	11,076,970	923 946	4,580,010	536 969	1,930,539	284,443	415,615,693	38,195,349
Lubricating,	9 065,085	1 858.081	998,573	198,428	99,697	16 045	246,290	71,904	106,090	35,137	10,515,535	2,179,595
Residuum,	4,470,060	308,512	176,736	9,050	630,882	32,247	10,164	960	9,282	1,910	5,297,124	352,679
Total, 1884,	411,325,987	37,581,132	83,506,412	7,593 338	11,807,549	972,238	4,845,548	611,708	2,174,596	344,832	513,660,092	47,103 248

PETROLEUM PRODUCED AND EXPORTED.

Quantity of Crude Petroleum Produced in, and the Quantity and Value of Petroleum Products Exported from, the United States during the years ending June 30, from 1864 to 1884, inclusive.

YEAR ENDING JUNE 30—	PRODUCTION.		EXPORTS.											
			Mineral, crude (including all natural oils without regard to gravity.		MINERAL, REFINED OR MANUFACTURED.						Residuum (tar, pitch, and all other from which the light bodies have been distilled.)		Total.	
					Naphthas, benzine, gasoline, &c.)		Illuminating.		Lubricating, (heavy paraffine, &c.)					
	Barrels (of 42 gallons) produced.	Gallons produced.	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars.*	*Gallons.*	*Dollars*	*Gallons.*	*Dollars.*
1864,	2,478.709	104,105,778	9,980.654	3,864,187	438.197	154.091	12 791,518	6 764,411					23,210.369	10.782,689
1865,	2,424,905	101,846,010	12,293,897	6,868,513	480,947	173,943	12,722,005	9,520,957					25.496,849	16.563,413
1866,	3,165,700	132,959,400	16,057.943	6 015,921	673.477	188,825	34.255,921	18,626,141					50,987,341	24,830 887
1867,	3,591,900	150,859.800	7,344,248	1,864,001	224 576	34.175	62,636,657	22 509,466					70,255,481	24,407.642
1868,	3,613,709	151,775,778	10,029,659	1,564,933	1,517,268	267 873	67,909,961	19,977,870					79.456,888	21,810.676
1869,	4,046,558	169,955,436	13.425.566	2,994,404	2,673,094	445,770	84,403,492	27,636,137	134,532	51,122			100,636,684	31,127,433
1870,	4,411,016	185,262,672	10,403,314	2,237,292	5 422 604	564,864	97.902 505	29,864,193	6,871	2,611			113,735,294	32,668,960
1871,	5,558,775	233,468,550	9,859,038	1,971.847	7,209,592	746,797	132,608 955	34,138.736	59,632	22,660	155,474	14,770	149,892.691	36,894.810
1872,	5,842,497	245,384,874	13,559,768	2,307,111	8.092,635	932,160	122,539,575	30 566,108	541,419	211,287	438,186	41,724	145,171,583	34,058.390
1873,	7,242,343	304,178.406	18,439,407	3,010,050	9,743.593	1,487,439	158,102 414	37,195,735	748,699	277,966	781,074	79.566	187,815,187	42 050,756
1874,	11,188,741	469,927,122	17,776,419	2,099.696	9,737,457	1,038 622	217,220,504	37,560,995	1,244,305	404,243	1,827,798	142,299	247,806,483	41,245.815
1875,	10,083 828	423,520,776	14,718,114	1,406,018	11,758,940	1,141 440	191,551,933	27,030,361	1,173,473	313,646	2,752,848	187,103	221,955,308	30 078,568
1876,	8,823,142	370,571,964	20,520,397	2,220.268	14,780,236	1,442,811	204 814.673	28,755,633	963,442	303,863	2,581,404	193,206	243,660,152	32.915,786
1877,	10,822,871	454,560,582	26,819 202	3.756 729	15,140,183	1,816,682	262.441 844	55,401,132	1,601,065	497,540	3,196.620	317.355	309,198,914	61,789,438
1878,	14,738,262	619,007,004	26,936,727	2,694,018	16,416.621	1,411,812	289 214 541	41,513,676	2,304,624	639,381	3,968 790	316,087	338 841,303	46.574 974
1879,	16,917,606	710.539.452	25,874.488	2,180,413	15,054,361	1.258,780	331,586,442	35,999,862	2,487,681	655.468	3.307.038	210,726	378 310,010	40,305 249
1880,	22,382.509	940,065,378	28,297,997	1,927.207	18,411,044	1,192,229	367,325,823	31,783,575	5,162 835	1.039,124	4 767,000	276,490	423,964,699	36,218.625
1881,	25,805,363	1,083.825 246	39,984 844	3,065,464	17,292,310	1,693 975	332.283.045	34,317,695	4 852,203	1,054.064	3,247.860	184,411	397,660,262	40,315 609
1882,	28,650,181	1,203,307,602	41,304,997	3,129.511	26,213.098	1,809,143	488.213.033	44,588,854	6,508,100	1,492.396	3,715,362	212,802	559,954 590	51,232,706
1883,	26,662,808	1,119,837,936	52,712,306	3,914,941	17,070,537	1,302.286	419,821,081	36,926,574	10,182,342	2.326,632	6,145,356	442,646	505,931,622	44,913,079
1884,	23,744,924	997,286,808	67,186,329	5,302,974	15,045,411	1,072,651	415,615,693	38,195,349	10,515,535	2,179,595	5,297,124	352,679	513,660,092	47,103,248

PRODUCING WELLS.

Number of Producing Wells at the close of each month in the following years:

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Averages.
1874, . . .	3,311	4,490	4,411	4,265	4,317	4,400	4,420	4,163	3,940	3,654	3,413	3,358	4,109
1875, . . .	3,132	3,235	3,308	3,301	3,266	3,298	3,293	3,287	3,254	3,270	3,220	3,270	3,276
1876, . . .	3,314	3,112	3,060	3,052	3,080	3,084	3,067	3,088	3,112	3,125	3,174	3,088	3,098
1877, . . .	0,288	3,638	3,670	3,772	3,930	4,527	4,774	6,047	5,285	5,552	5,809	6,000	4,685
1878, . . .	8,616	6,441	6,666	6,846	7,037	7,352	7,567	7,684	7,872	8,061	8,323	8,458	7,383
1879, . . .	10,482	8,725	8,848	0,071	9,400	9,605	9,776	9,884	10,012	10,188	10,276	10,337	9,561
1880, . . .	12,000	10,582	10,692	10,782	11,045	11,223	11,461	11,585	11,760	11,860	11,960	11,960	11,283
1881, . . .	14,900	12,072	12,222	12,572	12,972	13,172	13,275	13,500	13,825	14,100	14,400	14,700	13,234
1882, . . .	18,400	15,050	15,500	15,769	16,150	16,700	17,000	17,250	17,562	17,799	18,040	18,300	16,668
1883, . . .	17,600	18,600	18,850	19,150	19,350	19,500	19,570	19,600	19,600	19,000	18,700	18,000	19,027
1884, . . .	20,750	17,300	17,250	17,100	17,100	17,050	17,100	17,100	17,300	19,100	20,406	20,606	17,918
1885, . . .	21,950	20,930	21,000	21,242	21,434								

NEW WELLS COMPLETED.

Number of Drilling Wells completed in the following years:

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
1874, . . .	102	94	100	105	102	130	114	120	106	101	100	98	1,263
1875, . . .	190	104	110	113	109	101	121	107	104	120	106	120	1,317
1876, . . .	240	187	195	186	172	190	200	210	201	220	217	230	2,398
1877, . . .	281	231	242	200	202	261	248	270	209	273	272	272	2,920
1878, . . .	274	241	291	269	320	403	317	255	322	467	391	382	3,939
1879, . . .	136	226	211	409	470	269	203	186	174	229	248	165	3,064
1880, . . .	320	132	238	270	402	330	327	283	210	232	227	261	3,048
1881, . . .	222	230	367	500	426	310	338	368	356	364	336	302	4,217
1882, . . .	347	220	271	316	406	374	336	332	312	322	363	406	3,380
1883, . . .	125	340	385	432	469	340	185	253	164	117	150	122	3,304
1884, . . .	229	126	142	209	231	228	261	309	321	321	302	272	2,847
1885, . . .	64	209	256	298	311								

REPORTS OF ALL PIPE LINES FOR JANUARY, 1885.

LINES.	Receipts.	Deliveries.	Stocks.
National,	1,483,973.11	1,618,712.16	35,071,579.19
United,	.....	5,994.12	32,100.26
Tidewater,	190,950.11	198,221.16	1,504,885.58
Franklin,	5,130.20	8,083.59	20,594.79
Charley Run,	196.00	173.03	3,717.00
Octave,	2,326.00	1,783.00	5,144.00
Shaffer Run,	.....	173.00	30,636.32
Cranberry,	1.714.04	2,997.80	24,454.16
Surplus,	.....	.....	521,162.70
Total,	1,684,289.46	1,836,137.86	37,214,274.00

NOTE.—Of the above receipts, 32,108.97 barrels were received from other pipe lines, the actual quantity received from the wells being 1,652,180.49 barrels; and of the above deliveries, 32,108.97 barrels were delivered to other pipe lines, the actual deliveries out of stock being 1,804,028.89 barrels.

DRILLING WELLS.

Number of Drilling Wells at the close of each month in the following years:

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Averages.
1874,	37	349	227	177	228	395	340	267	197	163	137	60	242
1875,	40	55	99	213	225	210	180	128	107	82	57	54	121
1876,	142	40	45	64	127	162	118	96	132	170	179	168	112
1877,	457	151	230	267	307	340	353	374	511	565	618	493	363
1878,	334	463	395	448	512	395	365	417	535	573	565	426	463
1879,	265	326	379	409	376	266	188	185	240	282	297	218	292
1880,	540	323	406	468	460	384	329	258	270	313	372	440	357
1881,	383	535	577	580	460	440	452	515	491	469	473	408	495
1882,	422	420	437	446	470	408	379	352	388	445	475	468	423
1883,	126	438	408	405	381	226	240	194	177	184	154	138	276
1884,	270	151	205	199	216	228	262	315	314	341	301	263	243
1885,	97	273	260	284	244								

FLOUR AND GRIST-MILLS.

COUNTY.	Number of mills.	Number of runs of stone.	Number of sets of rolls.	Power used, steam or water.	Daily capacity in bushels.	Number of bushels of wheat milled.	Number of bushels of other grain milled.	Number of barrels of flour made.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Per cent. of State or other grain used.
Adams,	34	106	6	S. & W. 1 W. 33	3,642	129,026	271,786	13,917	260	51	$3,690	S. 100
Allegheny,	32	78	104	S. 20 S. & W. 6 W. 5	9,824	502,960	439,835	91,750	161	179	79,617	S. 90 O. 5
Armstrong,	32	85	26	S. 10 S. & W. 10 W. 12	3,825	223,550	177,556	26,055	203	58	10,781	S. 95 O. 5
Beaver,	17	50	25	S. 8 S. & W. 2 W. 7	3,832	189,100	172,750	27,980	200	42	12,967	S. 96 O. 4
Bedford,	40	99	21	S. 3 S. & W. 9 W. 28	2,639	264,930	238,873	20,893	204	55	9,088	S. 97 O. 3
Berks,	118	370	55	S. 3 S. & W. 29 W. 86	7,128	487,320	298,808	61,075	278	164	31,326	S. 99 O. 1
Blair,	31	79	17	S. 2 S. & W. 6 W. 23	3,361	240,221	241,173	20,279	260	52	12,413	S. 95 O. 5
Bradford,	44	138	12	S. 8 S. & W. 12 W. 24	11,540	146,533	602,974	23,985	210	87	21,019	S. 98 O. 2
Bucks,	70	197	57	S. 2 S. & W. 19 W. 49	10,004	384,153	766,715	48,718	248	141	31,488	S. 97 O. 3
Butler,	28	89	17	S. 9 S. & W. 10 W. 9	5,366	206,617	495,341	42,162	214	60	15,136	S. 98 O. 2
Cambria,	16	45	22	S. 3 S. & W. 1 W. 12	2,051	149,585	94,495	18,413	238	30	9,809	S. 99 O. 1
Cameron,	2	11	....	S. & W. 1 W. 1	1,300	45,000	89,000	9,000	275	10	6,375	S. 2 O. 98

Carbon,	7	18	5	S. 1 W. 6	438	21,549	65,704	4,190	295	11	4,427	S. 75 O.25
Centre,	26	73	24	S. 3 S. & W. 5 W. 18	3,917	221,945	364,214	37,473	247	55	13,497	S. 98 O. 2
Chester,	109	248	64	S. 4 S. & W. 12 W. 93	10,393	657,324	1,058,344	123,704	250	173	34,263	S. 100
Clarion,	20	64	3	S. 3 S. & W. 5 W. 12	2 570	133,835	149,476	28,450	200	29	5,830	S. 99 O. 1
Clearfield,	19	55	....	S. & W. 6 W. 13	2,330	81,203	158,204	9,253	256	26	6,921	S. 98 O. 2
Clinton,	17	51	9	S. & W. 1 W. 16	2,635	134,327	173,394	27,683	257	32	7,217	S. 99 O. 1
Columbia,	31	105	2	S. & W. 2 W. 29	3,607	126,707	293,136	10,255	276	41	10,109	S. 99 O. 1
Crawford,	28	82	17	S. 3 S. & W. 10 W. 15	7,580	193,105	559,527	29,038	274	64	24,866	S. 80 O.20
Cumberland,	34	98	46	S. 1 W. 33	4 345	357,328	247,613	55,575	255	73	16,227	S. 100
Dauphin,	37	108	65	S. 1 S. & W. 7 W. 29	7,118	1,027,297	284,317	211,966	255	120	29,502	S. 100
Delaware,	17	30	38	S. 2 S. & W. 2 W. 13	3,240	404,550	195,550	79,333	251	62	33,604	S. 97 O. 3
Elk,	4	8	....	S. 1 S. & W. 1 W. 2	175	1,800	19,000	.. ...	150	6	1,680	S. 1 O.99
Erie,	31	88	72	S. 10 S. & W. 11 W. 10	10,545	663,538	806,858	177,766	250	134	69,889	S. 95 O. 5
Fayette,	28	79	13	S. 11 S. & W. 7 W. 10	2,755	275,496	142,044	24,501	231	53	15,433	S. 98 O. 2
Forest,	2	5	...	W. 2	280	1,800	12,800	400	200	3	100	S. 75 O. 2
Franklin,	46	118	8	S. 2 S. & W. 2 W. 42	4,262	275,249	304,490	36,941	271	61	9,846	S. 100
Fulton,	20	52	2	S. & W. 2 W. 18	831	88,820	58,201	1,700	257	22	2,968	S. 100
Greene,	16	37	1	S. 9 S. & W. 4 W. 3	2,489	143,750	68,800	2,300	180	24	4,015	S. 100
Huntingdon,	39	114	12	S. 3 S. & W. 1 W. 35	4,168	309,741	173,670	33,112	241	43	18,535	S. 97 O. 3
Indiana,	41	104	51	S. 12 S. & W. 9 W. 20	6,237	388,707	277,598	43,975	226	96	21,669	S. 99 O. 1

FLOUR AND GRIST-MILLS—Continued.

COUNTY.	Number of mills.	Number of runs of stone.	Number of sets of rolls.	Power used, steam or water.	Daily capacity in bushels.	Number of bushels of wheat milled.	Number of bushels of other grain milled.	Number of barrels of flour made.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Per cent. of State or other grain used.
Jefferson,	19	53	....	S. 1 S. & W. 5 W. 13	2,425	76,068	133,478	2,556	236	26	$5,135	S. 97 O. 3
Juniata,	21	63	2	W. 21	1,330	105,727	106,908	4,153	275	33	6,552	S. 100
Lackawanna,	11	29	....	W. 6	2,986	1,078	544,483	450	243	31	16,897	S. 40 O. 60
Lancaster,	157	476	106	S. 5 W. 115 W. & S. 32	20,272	1,544,222	1,810,886	241,252	256	254	59,656	S. 95 O. 5
Lawrence,	18	58	60	S. 9 W. 14 S. 2 S. & W. 2	4,625	369,300	225,001	72,412	236	49	16,899	S. 70 O. 30
Lebanon,	27	86	28	W. 16 S. 3 S. & W. 8	3,480	265,131	412,271	26,200	282	66	17,916	S. 100
Lehigh,	48	149	78	W. 38 S. & W. 10	6,669	795,584	566,030	156,704	262	90	26,224	S. 80 O. 20
Luzerne,	32	109	41	W. 22 S. 5 S. & W. 5	5,148	147,786	673,466	13,650	246	65	30,059	S. 45 O. 55
Lycoming,	25	78	19	W. 22 S. & W. 3	4,080	315,906	306,488	43,963	277	56	16,432	S. 90 O. 10
McKean,	2	6	.	W. 2	350	1,300	50,000	. .	275	2	700	S. 20 O. 80
Mercer,	24	62	62	W. 15 S. 6 S. & W. 3	4,052	936,000	429,650	58,285	264	60	22,887	S. 90 O. 10
Mifflin,	19	53	16	W. 15 S. & W. 4	1,398	179,951	224,282	24,263	243	34	10,096	S. 100
Monroe,	27	86	16	W. 26 S. & W. 1	1,745	69,173	317,566	6,320	294	31	7,186	S. 90 O. 10
Montgomery,	70	238	183	W. 48 S. & W. 27 S. 5	12,385	1,016,489	1,028,884	189,776	285	189	56,061	S. 90 O. 10

Montour,	4	11	3	W.	3	251	26,400	22,562	4,883	244	8	3,235	S. 100	
				S.	1									
Northampton,	51	173	68	W.	46	6,139	548,020	981,908	98,321	287	111	40,443	S. 95 O. 5	
				S. & W.	5									
Northumberland,	25	75	4	W.	20	1,341	128,235	197,995	8,535	251	32	6,248	S. 95 O. 5	
				S.	2									
				S. & W.	3									
Perry,	38	112	8	S.	1	2,617	160,778	216,774	13,404	250	46	8,446	S. 100	
				S. & W.	4									
				W.	33									
Philadelphia,	10	26	31	S.	9	5,400	460,000	669,500	104,500	283	77	40,176	S. 60 O. 40	
				S. & W.	1									
Pike,	5	14	....	W.	5	425	5,000	41,000	.....	273	5	5,449	S. 100	
Potter,	5	8	....	S.	2	1,025	550	15,482	250	94	5	702	S. 99 O. 1	
				S. & W.	2									
				W.	1									
Schuylkill,	34	102	48	S.	5	3,129	244,510	215,146	41,744	241	67	23,345	S. 96 O. 4	
				S. & W.	10									
				W.	19									
Snyder,	19	62	14	S. & W.	1	1,884	207,799	104,903	33,620	286	35	7,559	S. 100	
				W.	18									
Somerset,	35	98	8	S.	2	2,000	201,053	157,124	10,126	227	41	9,145	S. 100	
				S. & W.	8									
				W.	25									
Sullivan,	6	19	.	S.	1	513	18,969	42,996	1,642	260	7	1,697	S. 99 O. 1	
				W.	5									
Susquehanna,	31	87	6	S.	1	6,605	31,268	502,353	2,630	258	40	9,831	S. 60 O. 40	
				S. & W.	5									
				W.	25									
Tioga,	20	63	....	S.	3	4,165	49,511	242,245	4,010	221	33	9,003	S. 90 O. 10	
				S. & W.	8									
				W.	7									
Union,	13	34	26	S.	2	2,209	311,060	84,980	60,807	279	29	9,311	S. 100	
				S. & W.	1									
				W.	10									
Venango,	18	47	20	S.	2	4,055	128,613	277,595	24,650	244	39	14,119	S. 98 O. 2	
				S. & W.	1									
				W.	15									
Warren,	8	18	14	S.	2	2,474	27,228	135,051	4,225	208	18	7,190	S. 60 O. 40	
				S. & W.	1									
				W.	5									
Washington,	35	89	27	S.	15	4,435	492,097	298,339	85,539	198	67	22,746	S. 99 O. 1	
				S. & W.	10									
				W.	10									
Wayne,	18	53	3	S.	1	5,051	6,976	399,098	3,140	244	28	9,931	S. 60 O. 40	
				S. & W.	2									
				W.	15									
Westmoreland,	44	98	71	S.	23	4,609	478,855	263,052	60,705	213	76	24,766	S. 100	
				S. & W.	11									
				W.	10									

FLOUR AND GRIST-MILLS—Continued.

COUNTY.	Number of mills.	Number of runs of stone.	Number of sets of rolls.	Power used, steam or water.	Daily capacity in bushels	Number of bushels of wheat milled.	Number of bushels of other grain milled.	Number of barrels of flour made.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Per cent. of State or other grain used.
Wyoming,	14	49	2	S. & W. 1 W. 13	3,380	34,020	266,375	4,950	259	19	$5,835	S. 99 O. 1
York,	95	279	16	S. & W. 13 W. 82	7,825	721,935	823,467	101,425	249	127	27,586	S. 100
Total, 1883,	2,074	5,977	1,773	S. 242 S. & W. 379	285,154	18,453,658	22,053,487	2,855,832	244	3,953	$1,153,750	S. 97 O. 3
Total, 1884,	2,470	6,967	1,121	W. 1,358	. .	19,432,930	23 885,539	3,895,354	239	4 728	1,128,064	
Decrease,	396	990	. . . .	1884. S. 309 S. & W. 415	. . . . .	979,272	1,832,052	1,039,522	. . .	775		
Increase,	. . . .	. . . .	652	W. 1,739	. . . .	. . . . .	. . . . .	. . . .	5	. . . .	$25,686	
				S. 67 D. S. & W. 36 D. W. 381 D.								

NOTE.—Blanks were sent out to 2,966 flour and grist-mills. Of these 410 were not returned, and 482 returned unfilled or imperfectly, as the parties reported not being in business, leaving 2,074 as the number which were properly filled out and are included in the above table.

LUMBER AND ITS PRODUCTS.

Table showing the number of Saw-Mills, Planing-Mills, Furniture, and other Wood-Working Establishments in the several counties of the State, together with the value or amount of product, wages paid, &c., compiled from returns made to this Bureau for the year ending Dec. 31, 1884.

SAW-MILLS.

Number.	County.	Number of mills.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Power.			Horse-power.	Number of saws.	White pine—feet.	Hemlock—feet.	Cherry—feet.
						Steam.	Water.	Steam and water.					
1	Adams,	4	94	8	$825	1	3			12	44,000	25,000	
2	Allegheny,	14	219	222	90 070	14			398	39	15,864,548	5 734,584	10 000
3	Armstrong,	6	168	96	47,110	5	1		182	22	2,900.636	704,050	5,000
4	Bedford,	6	113	21	3.481	2	3		58	7	212,000	103 000	2,000
5	Berks,	1	300	5	1,550	1			20	3			
6	Blair,	9	197	263	87,130	5		1	370	32	4,164,755	8,249,325	3,000
7	Bradford,	38	128	234	45.897	27	8	1	1,144	120	3,702,750	16,739,164	11,000
8	Bucks,	9	184	41	12,525	2	6	1	210	20	186,500	20,000	4,000
9	Butler,	2	150	7	1,500	1	1		20	2			
10	Cambria,	19	121	153	43,880	7	5	1	438	38	1,452,000	3,580,000	121,000
11	Cameron,	4	160	83	22,662	3			225	34	1,310,000	12,500,000	60,000
12	Carbon,	1	122	9	1,350		1			5	20,000	200,000	
13	Centre,	27	151	243	51,374	14	9		774	140	5,599,728	11,557,081	855
14	Chester,	6	170	10	1,050		6		69	11			3,000
15	Clarion,	13	147	195	65,132	11	2		540	26	17,555,000	2,304,000	
16	Clearfield,	24	134	552	162,679	16	5	1	1,563	314	30,281,182	28,007,331	51,000
17	Clinton,	9	96	132	24,042	4	5		305	31	7,937.565	4,286,344	
18	Columbia,	4	142	35	11,500	4			145	12	330,000	340,000	2,000
19	Crawford,	33	158	284	71,547	26	2	1	1,060	87	2,640,709	17,129,957	145,427
20	Cumberland,	1	300	10	3,750		1			5	1,500,000	500,000	
21	Dauphin,	8	222	118	37,492	6	2		255	39	5,197,634	1,999,988	
22	Delaware,	3	237	55	27,588	1	2		98	14	1,000,000	1,560,000	560,000
23	Erie,	23	139	181	68,824	18	2		510	65	549,671	32,059 784	395,124
24	Elk,	15	158	437	163,815	10	4	1	1,445	87	6,774,743	47,030,841	5,018,081
25	Fayette,	7	165	49	13,540	6	1		169	13	328,382	811,840	73,500
26	Forest,	4	133	76	16,600	1	1	1	210	30	3,800,000	3,400.000	10,000
27	Franklin,	8	143	38	9,932	3	5		135	18	1,560	2,200	
28	Fulton,	2	100	2	125		2		52	5	50,000		
29	Greene,	4	170	25	6,025	4			86	9	25,000	60,000	10,000
30	Huntingdon,	4	104	11	2,331	2	2		59	8	165,000	30,000	

SAW-MILLS—Continued.

Number.	County.	Number of mills.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Power.			Horse-power.	Number of saws.	White pine—feet.	Hemlock—feet.	Cherry—feet.
						Steam.	Water.	Steam and water					
31	Indiana,	21	112	157	$23,828	4	14	1	555	56	3 177,269	4,079,103	104,000
32	Jefferson,	21	123	297	87,103	15	4	1	805	77	10,052,439	15,244 258	50,750
33	Juniata,	6	150	22	2,925	2	3	...	85	8	60,000	15,000	
34	Lackawanna,	8	196	136	35,450	5	1	1	235	25	326 000	3,635,557	
35	Lancaster,	8	135	28	5,785	4	4	...	150	21	395,000	515,000	200
36	Lawrence,	2	225	18	7 790	2	..	..	65	4	....	...	4,500
37	Lehigh,	9	129	15	3 400	1	7	1	116	12	78,000	302 000	8,150
38	Luzerne,	7	212	29	11,110	4	2	..	170	13	1.620,000	1,940,000	
39	Lycoming,	63	121	1,525	417,496	38	18	3	2,985	941	109.726,513	89,019,751	394,584
40	McKean,	9	155	302	41,841	8	..	...	320	22	1,312,413	12,997.317	1,541,930
41	Mercer,	6	84	28	5,535	6	..	...	111	11	180,000	550,000	15,000
42	Mifflin,	1	90	....	....	..	1	...	....	1	..	....	
43	Montgomery,	2	250	9	2,950	1	...	1	115	4	...	300.000	
44	Montour,	1	200	4	1,050	1	..	...	30	1	150,000	325.000	
45	Monroe,	6	146	36	13 551	1	4	...	207	22	690.000	120,000	3,000
46	Northampton,	2	241	16	6 384	2	...	...	65	10	127,240	2,517,900	13,000
47	Northumberland,	4	182	100	41.532	3	...	1	175	21	750 000	3,500,000	
48	Perry,	3	156	12	1,925	1	2	..	60	6	64.000	150,000	
49	Philadelphia,	4	300	133	84,000	2	1	..	275	24	116,381	597,068	
50	Pike,	3	200	20	6.000	2	1	...	....	9	300.000	1,200,000	
51	Potter,	14	144	91	18,951	12	1	1	452	35	2,308,400	4,977,000	255,000
52	Schuylkill,	5	142	10	2 332	1	4	...	40	11	230,000	215,000	
53	Snyder,	8	128	66	6,530	2	4	1	230	45	861,000	720,000	
54	Somerset,	19	129	97	25,569	7	7	1	270	34	387,000	1,122,452	21,500
55	Sullivan,	7	129	48	7,096	3	2	1	255	19	15.000	4.654 000	15 000
56	Susquehanna,	30	129	96	21,071	8	18	3	683	64	523,000	10.205.764	127,768
57	Tioga,	26	136	290	56.741	19	5	2	911	91	1,177.432	18,224.197	139,080
58	Union,	3	211	46	14,090	1	1	...	150	7	4,016 738	10,288	
59	Venango,	2	175	19	4 350	2	..	....	45	3	10.000	100,000	
60	Warren,	36	182	462	131,813	23	3	3	898	69	5,107,002	22,321,177	769,442
61	Washington,	5	80	57	4 751	5	..	..	51	9	10.000	20,000	10,000
62	Wayne,	27	170	148	68,117	3	17	4	577	59	1,231 895	6,598,541	34,000
63	Westmoreland,	9	93	56	11.775	7	2	...	155	15	280,000	250,000	642
64	Wyoming,	11	146	58	13,585	5	5	1	291	31	735.000	3,893,048	15,000
65	York,	8	133	7	1,003	..	8	...	67	17	2,000	3,500	
		704	157	8,036	$2,332,755	394	218	34	22,140	3,055	249,613,025	409,257,410	9,997,533

SAW-MILLS--Continued.

Number.	County.	Ash—feet.	Chestnut—feet.	Walnut—feet.	Oak—feet.	Lumber, other—feet.	Shingles—thousands.	Lath—thousands.	Staves—thousands.	Pickets—B. H. & C.—thousands.
1	Adams,	1,000	25,000	3,172	97,368	4,200	190,000	102,000	50,000	30,000
2	Allegheny,	50,000		16,000	3,445,412	272,561	2,600,000	4,770,000	53,000	850,000
3	Armstrong,	10,000	3,000	7 000	856,900	160 000	1,500,000	1,000,000		25,000
4	Bedford,	3,000	3,200	3,000	1,031,000	17,759	4,000	69,000		16,000
5	Berks,				25,000	75,000				
6	Blair,	29,200	10,671	5,000	1,681 888	563 000	1,163.250	2,440,200		109,000
7	Bradford,	264,105	135.642	21,500	899,318	1,089,921	4,605,000	2,940,000	25,000	129,000
8	Bucks,	70,500	34 000	53,500	1,172,000	284.000		10,000		5,000
9	Butler,		75 000		85 000	2,200		7,600		
10	Cambria,	117,000	61,000	39,000	2,803,000	327,000	1,110,000	1,537,000	40,000	7,000
11	Cameron,	80,000	5,000		300,000	125,000	337,000	2,000,000		50,000
12	Carbon,		20,000			60,000		300.000		50,000
13	Centre,	9,500	612,428	8,285	1,806,520	1,579,322	17,007,000	6,062,700	2,100,000	593,000
14	Chester,	15,000	62,000	20,000	274,000	49,600	30,000	97,000		7,000
15	Clarion,		715,000		787,000	85,000	2,650,211	3,000,400		10,000
16	Clearfield,	71.000	50,000	10,000	1,375,879	6 586.727	21,971,750	8,501.800	85,200	361,550
17	Clinton,	59,527	81,429	480	218,108	682,519	687,400	734,900		565,000
18	Columbia,	2,000	25,000	2,000	240,000	50,400	300,000	200,000		80,000
19	Crawford,	345,828	344,589	15,862	633,750	3,652,000	4,329,000	9,299,000	750,000	800,500
20	Cumberland,				200.000		110,000	240,000		35,000
21	Dauphin,	10 000	10,000	10,000	814,059	342,440	6,978 870	1,500,000	83,800	254,800
22	Delaware,	4,000	10,680	21,023	604 664	36,671				110,000
23	Erie,	601.082	83,760	5,000	162,500	1,597,803	480,000	91,000		610.000
24	Elk,	546 197	22,310	424	696.507	1,786.191	3,913.350	5 909.500		223.260
25	Fayette,	50,000	20,000	30,000	297,500	624,000	159,000	121,000		5,000
26	Forest,	5,000			85,000	10,000	400,000	900,000		
27	Franklin,	2,000	2,000	60,000	631,426	209,000	21,850	21,370		30,000
28	Fulton,			10.000	25 000	5,000		20,000		
29	Greene,	20,000	10,000	20,100	180 000	600,500	50,000	100,000		7,500
30	Huntingdon,				102,000	583,000	5,000			
31	Indiana,	8.000	92.000	5,000	1.500.091	185.366	2,384.000	1,980,000	30,000	64,000
32	Jefferson,	134,534	81,389		909,185	545,000	8,518,427	1,482,567	50,000	20,227
33	Juniata,		10,134		793,368	16,600	30 000	11,800		2,000
34	Lackawanna,	86,000	22,000		50,000	1,178.860	420,000	1,600,000		50,000
35	Lancaster,	12 000	40,500	47,000	205,000	793,788		77,000		40,000
36	Lawrence,	3,400	7,000	6,800	1,590,000	643,000			30,000	

SAW-MILLS—Continued.

Number.	COUNTY.	Ash—feet.	Chestnut—feet.	Walnut—feet.	Oak—feet.	Lumber, other—feet.	Shingles—thousands.	Lath—thousands.	Staves—thousands.	Pickets—B. H. & C.—thousands.
37	Lehigh,	12,260	94,380	12,826	179,817	161,600		24,090		
38	Luzerne,	34,000	40,000	2,000	1,205,000	135,000	400,000	2,500		500
39	Lycoming,	589,162	141,575	3,882	822,938	1,856,907	12,522,250	48,847,430		3,603,471
40	McKean,	396,953	40,000			1,895 000				
41	Mercer,	95,000	105,000	9,000	379,000	255,000	395,000	200,000		
42	Mifflin,				20,000	15,000				
43	Montgomery,	2,000			103,000	26,500				4,000
44	Montour,				50,000		220,000			
45	Monroe,	25,000	101,000	75,000	365,000	1,600 000		1,800,000	180,000	25,000
46	Northampton,	2,077	30,502	221	133,799	37,359		553,500		14,000
47	Northumberland,				110,000	2,848,000	1,004 171	1,161,400		60,000
48	Perry,		60,000	20,000	234,000	60,000	600,000	60,000		30,000
49	Philadelphia,				565,660	2,978,027		909,000		5,000
50	Pike,		100		300	500	300,000	300,000		
51	Potter,	134,300	1,000		1,000	225,260	6,990,000	350,000		
52	Schuylkill,		32,000	4,000	80,000	64 492	6,000	136,392		10,000
53	Snyder,	4,000	12,000	6,600	150,000	159,000	889,000	617,000	725,000	205,000
54	Somerset,	21,000	109,532	5,000	2,078,679	6 388	1,727,000	322,200	667,000	
55	Sullivan,	32,000	2,000			230,000	25,000	250,000		
56	Susquehanna,	346,845	224,205	30,000	96,800	720,484	150,000	725,300		6,000
57	Tioga,	316,924	17,200		229 500	951,522	371,000	3,898,000	240,000	12,000
58	Union,	806			196,638	1,314	621	9,910		1,450
59	Venango,				100,000	130,000	130,000	30,000		
60	Warren,	542,418	190,000		1,804,956	1,035,951	12,170,000	2,855,000	1,650,000	10,000
61	Washington,			10,500	595 000	1.000				
62	Wayne,	162 000	66,000	15,000	540,000	3,673,208	196,000	95,000	70,000	1,000
63	Westmoreland,	7,740	269,050	211,430	680,888	310,000	350,000	400,000		17,000
64	Wyoming,	115,000	15,000		320,000	335,000	100,000	502,500		2,000
65	York,	682	139,366	11,440	114,887	9,618	191,663	50 516		5,000
		5,405,040	4,365,642	837,045	37,735,295	44,544,958	120,692,813	121,226,575	6,829,000	8,851,258

LUMBER AND ITS PRODUCTS—Continued.

COUNTY.	Number of mills.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.	Number of feet of material consumed.
Planing Mills.						
Allegheny,	20	274	495	$267,831	$850,000	18,509,500
Armstrong,	2	230	13	3,940	15,000	872,000
Beaver,	6	271	91	40,851	120,250	2,901,500
Bedford,	1	50	3	150	625	100,000
Berks,	3	307	150	70,903	218,150	
Blair,	5	261	117	63,020	190,500	6,075,000
Bradford,	3	200	33	11,668	35,000	1,175,000
Bucks,	2	287	22	7,600	22,800	
Cambria,	2	295	43	17,000	51,000	670,000
Carbon,	1	300	4	2,000	3,000	
Centre,	5	216	527	186,500	525,725	14,275,000
Chester,	4	262	38	16,100	50,000	201,000
Clearfield,	3	288	121	46,700	150,000	8,194,000
Clinton,	3	232	98	35,068	165,500	16,633,500
Columbia,	2	299	25	12,347	37,000	770,000
Crawford,	4	225	46	16,804	50,581	526,000
Cumberland,	2	307	21	8,577	25,550	
Dauphin,	3	300	58	24,293	91,000	2,461,668
Delaware,	4	300	46	23,090	75,000	535,000
Elk,	2	271	17	8,125	24,235	885,000
Erie,	2	310	104	43,400	139,200	5,311,000
Fayette,	3	241	66	38,644	115,000	346,100
Franklin,	2	300	20	9,150	28,150	685,000
Greene,	1	300	2	300	1,000	100,000
Huntingdon,	1	300	26	9,300	28,000	3,023,176
Indiana,	3	253	16	5,250	15,750	1,206,500
Jefferson,	1	250	7	2,900	8,700	400,000
Juniata,	1	100	4	400	1,200	150,000
Lackawanna,	1	305	23	11,500	34,500	2,305,000
Lancaster,	5	265	103	39,913	115,950	200,000
Lawrence,	1	200	3	900	2,500	
Lebanon,	2	220	17	5,615	16,845	808,000
Lehigh,	2	279	40	16,380	56,462	938,722
Luzerne,	5	265	49	26,458	80,000	1,754,144
Lycoming,	4	300	159	61,450	200,000	475,000
McKean,	3	215	19	4,917	12,150	926,275
Mercer,	5	206	92	41,500	125,000	7,760,000
Mifflin,	1	300	14	3,400	10,200	
Montgomery,	3	283	25	8,752	26,000	
Northampton,	4	302	66	31,395	94,185	299,000
Northumberland,	2	258	170	53,014	270,730	
Perry,	2	263	40	13,479	39,715	2,820,000
Philadelphia,	19	288	616	351,933	1,270,501	2,896,396
Schuylkill,	2	305	31	16,800	28,000	1,800,000
Snyder,	1	100	3	450	1,350	
Somerset,	6	205	44	11,605	35,000	3,964,000
Susquehanna,	2	225	4	748	2,500	905,000
Tioga,	3	183	34	10,550	31,650	3,700,000
Warren,	2	250	21	18,000	32,400	270,000
Washington,	4	250	46	14,600	43,800	900,000
Wayne,	1	310	7	3,600	5,100	969,000
Westmoreland,	7	266	81	31,431	116,187	6,456,500
Wyoming,	1	310	4	1,200	3,600	300,000
York,	3	265	59	16,060	42,000	3,153,500
	188	256	3,983	$1,767,561	$5,734,241	129,606,481

LUMBER AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Furniture.					
Adams,	1	242	26	$3,267	$8,922
Allegheny,	3	173	159	87,828	201,863
Berks,	1	300	9	2,207	7,211
Bradford,	2	234	29	7,273	25,973
Cambria,	1	252	20	5,160	8,320
Clinton,	1	270	48	17,200	56,000
Crawford,	1	300	19	9,300	15,000
Dauphin,	1	277	27	10,919	40,000
Erie,	3	280	89	34,400	102,500
Jefferson,	1	200	6	1,200	2,000
Lackawanna,	1	290	16	8,429	21,514
Lancaster,	1	300	10	4,000	4,500
Lycoming,	8	272	914	363,368	861,052
McKean,	1	240	20	7,666	16,628
Northumberland,	1	275	16	6,050	35,060
Philadelphia,	40	298	1,544	735,024	1,999,424
Susquehanna,	2	228	35	9,000	18,500
Tioga,	1	289	37	14,445	31,618
Warren,	1	300	47	33,529	100,000
Washington,	1	300	1	750	1,000
Wayne,	1	300	6	2,800	5,000
Total, 1884,	73	268	3,078	$1,365,815	$3,562,085
Total, 1883,	72	277	2,941	1,328,167	3,799,519
Increase,	1	....	137	$37,648	
Decrease,	...	9	.....	.....	$237,434
Carriages and Wagons.					
Adams,	2	300	23	$2,100	$4,250
Allegheny,	12	280	149	66,639	192,224
Berks,	1	230	1	200	500
Bucks,	2	300	53	18,981	62,000
Cumberland,	3	300	52	17,500	55,000
Dauphin,	2	282	32	3,500	28,000
Erie,	2	300	16	6,996	15,539
Lancaster,	2	300	62	5,200	91,500
Lehigh,	1	300	11	2,200	5,500
Luzerne,	1	300	7	2,000	10,000
Lycoming,	2	282	21	9,234	20,800
Montgomery,	1	300	8	3,850	7,500
Northampton,	3	300	27	13,792	32,575
Philadelphia,	15	271	513	283,427	678,171
Schuylkill,	1	300	10	3,423	9,000
Union,	5	282	29	8,120	26,050
Venango,	1	300	17	6,500	20,000
Washington,	1	300	28	8,386	18,223
Westmoreland,	1	300	10	4,400	7,500
York,	4	297	23	4,030	12,000
Total, 1884,	62	281	1,092	$470,478	$1,296,332
Total, 1883,	56	298	1,138	545,256	1,323,049
Increase,	6	.. .	...		
Decrease,	...	17	46	$74,778	$26,717
Cars—Railroad.					
Beaver,	1	300	29	$12,863	$61,365
Blair,	1	270	70	3,800	87,500
Columbia,	2	235	538	134,031	736,565
Cumberland,	1	280	75	37,668	123,004
Dauphin,	3	153	269	70,863	250,284
Erie,	1	300	126	52,922	365,000
Northumberland,	1	250	331	69,981	452,451
Philadelphia,	2	309	680	316,177	1,425,125
Westmoreland,	1	125	20	3,793	13,670
York,	1	60	30	5,000	20,000
Total, 1884,	14	228	2,168	$707,098	$3,534,964

NOTE.—The report for 1883 included car-wheels and other iron, which is not included under this heading for 1884.

LUMBER AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Staves and Headings.					
Bucks,	1	100	8	$450	$1,350
Crawford,	1	200	10	4,500	13,500
Cumberland,	2	182	38	7,465	22,395
Dauphin,	1	300	16	2,800	7,400
Erie,	4	247	56	14,450	43,350
Lancaster,	2	237	12	4,400	13,200
Mercer,	3	136	222	26,500	78,500
Warren,	1	300	6	1,800	5,400
Westmoreland,	1	300	3	1,500	4,500
	16	222	366	$63,865	$189,595
Boxes and Boats.					
Allegheny,	2	270	29	$13,200	$39,000
Erie,	1	300	10	6,000	18,000
Lycoming,	3	231	92	27,124	131,330
Montgomery,	1	200	5	1,500	5,600
Philadelphia,	1	303	41	15,650	55,000
Schuylkill,	1	247	14	4,350	15,015
Wayne,	2	207	12	3,345	9,000
	11	251	203	$71,169	$272,945
Hubs, Spokes, and Felloes.					
Berks,	1	295	26	$9,200	$20,000
Chester,	3	275	188	74,500	225,000
Columbia,	1	200	4	877	3,337
Cumberland,	2	294	50	20,341	60,000
Fayette,	1	212	5	1,237	4,500
Lancaster,	2	250	25	10,900	33,500
Lehigh,	1	250	5	1,250	4,400
Lycoming,	1	250	3	1,050	1,700
Monroe,	1	305	4	1,200	3,000
Philadelphia,	3	290	79	38,474	98,000
Pike,	1	300	8	2,000	6,000
Somerset,	1	100	6	600	1,806
Venango,	1	300	5	2,250	6,000
	19	255	408	$163,879	$467,237
Clothes-Pins.					
Monroe,	1	188	21	$3,948	$10,350
Lasts.					
Philadelphia,	2	309	23	$10,382	$25,173
Toys (wooden).					
Bradford,	1	310	75	$35,000	$60,000
Erie,	1	100	13	1,370	4,000
Philadelphia,	4	285	40	13,800	28,150
Susquehanna,	1	215	40	11,500	25,000
Total, 1884,	7	227	168	$61,670	$117,150
Matches.					
Philadelphia,	1	310	57	$10,900	$45,000
York,	1	100	1	25	200
Total, 1884,	2	310	58	$10,925	$45,200
Bobbins.					
Delaware,	2	300	3	$1,760	$3,800
Philadelphia,	2	291	34	14,476	30,448
Total, 1884,	4	295	37	$16,236	$34,249

LUMBER AND ITS PRODUCTS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Refrigerators.					
Philadelphia,	3	300	110	$32,404	$184,000
Trunks.					
Allegheny,	1	300	3	$1,000	$6,000
Philadelphia,	6	285	99	50,848	186,221
Total, 1884,	7	286	102	$51,848	$192,221
Barrels, Kegs, &c.*					
Allegheny,	4	260	90	$46,500	$163,500
Beaver,	2	187	9	1,410	9,999
Columbia,	1	180	6	1,525	9,000
Lancaster,	1	300	2	600	1,800
Mercer,	1	200	15	6,411	22,820
Philadelphia,	4	292	275	111,870	479,209
Venango,	1	270	45	27,675	120,000
Total, 1884,	14	241	442	$195,991	$636,328
Wood Pumps.					
Erie,	1	300	7	$3,000	$16,421
Wayne,	1	100	2	300	500
Total, 1884,	2	150	9	$3,300	$16,921
Wooden Ware, (*Hollow-Ware.*)					
Clarion,	1	220	3	$1,700	$2,000
Erie,	8	264	272	78,505	370,242
Lebanon,	2	190	61	20,500	15,531
Montgomery,	1	30	1	100	300
McKean,	3	242	14	5,816	27,938
Philadelphia,	10	298	165	83,755	316,852
Warren,	1	270	45	14,498	60,000
Total, 1884,	26	214	561	$204,874	$792,863

* NOTE.—The above table does not include the manufacture of barrels incidental to the oil-refining business, and which is reported elsewhere, nor does it include the manufacture of barrels and kegs incidental to some saw-milling. The report is compiled from returns made to the Bureau by those engaged in the manufacture of barrels and kegs only.

LUMBER AND ITS PRODUCTS—Recapitulation.

INDUSTRIES.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.	Number or weight of materials made.
Barrels, &c.,	14	241	442	$195,991	$686,328	
Boats and boxes,	11	251	203	71,169	272,945	
Bobbins,	4	295	37	16,236	34,249	
Cars,	14	228	2,168	707,098	3,534,964	
Carriages,	62	281	1,092	470,478	1,296,332	
Clothes-pins,	1	188	21	3,948	10,350	
Furniture,	73	268	3,078	1,365.815	3,562,085	
Hubs, spokes, &c.,	19	255	408	163,779	467,237	
Lasts,	2	309	23	10,382	25,173	
Lumber, (saw-mills,)	704	157	8,036	2.332,755		1,019,355,594 feet.
Matches,	2	310	58	10,925	45,200	
Planing-mills,	188	256	3,983	1,767,561	5,734,241	
Pumps,	2	150	9	3,300	16,921	
Refrigerators,	3	300	110	32,404	184,000	
Toys,	7	227	168	61,670	117,150	
Trunks,	7	286	102	51,848	192,221	
Staves and headings,	16	222	366	63,865	189,595	
Wooden-ware,	26	214	261	204,874	792,863	
Total, 1884,	1,155	246	20,565	$7,534,198	$17,161,854	1,019,355,594

TANNERIES.

TABLE *showing the number of Tanneries, production, etc., in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.*

COUNTY.	Number of tanneries.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.	Number of tons of chestnut oak bark used.	Number of tons of hemlock bark used.
Adams	6	287	13	$2,000 00	$95,400 00	371	
Allegheny	13	289	473	240,528 00	1,986,000 00	26,356	12,288
Armstrong	4	210	28	15,000 00	151,500 00	410	200
Beaver	1	200	*	*	600 00	15	
Bedford	12	252	318	44,687 00	525,000 00	12,448	101
Berks	18	273	92	49,781 00	255,075 00	2,425	89
Blair	4	287	43	14,265 00	382,500 00	2,050	3,875
Bradford	8	300	126	54,200 00	579,440 00	25,618	13,946
Bucks	5	291	17	4,272 00	59,500 00	478	10
Butler	2	200	*	400 00	4,500 00	110	
Cambria	7	283	48	14,334 00	150,203 00	375	4,902
Cameron	2	300	150	37,516 00	300,000 00	* * *	17,000
Carbon	1	225	*	*	3,300 00	350	200
Centre	1	291	54	22,725 00	330,302 00	994	8,941
Chester	3	300	19	3,500 00	47,000 00	525	
Clarion	2	214	1	187 00	844 00	18	3
Clearfield	3	250	59	41,000 00	300,300 00	1,387	14,630
Clinton	4	281	125	56,940 00	738,470 00	2,370	17,356
Columbia	3	225	11	2,150 00	14,000 00	710	520
Crawford	3	255	120	27,453 00	140,794 00	629	2,580
Cumberland	10	253	42	12,424 00	115,000 00	3,280	
Dauphin	13	288	70	24,265 00	192,726 00	71,796	
Elk	3	304	204	92,500 00	880,000 00	24,900	
Erie	3	301	284	64,833 00	358,441 00	14,300	5,655
Fayette	4	164	6	1,385 00	11,400 00	620	
Franklin	5	210	12	1,475 00	13,350 00	724	
Fulton	2	291	20	3,450 00	37,200 00	2,130	
Greene	1	300	1	300 00	1,500 00	50	
Huntingdon	3	251	124	41,492 00	481,236 00	13,427	1,992
Indiana	2	207	8	75 00	10,150 00	210	52
Jefferson	5	180	8	2,000 00	11,512 00	111	130
Juniata	1	187	9	1,020 00	34,000 00	845	
Lackawanna	1	300	31	11,440 00	150,000 00	175	3,500
Lancaster	15	283	109	48,613 00	277,275 00	4,015	196
Lawrence	1	300	1	150 00	5,000 00	* * *	40
Lebanon	5	287	17	2,158 00	35,471 00	640	
Lehigh	14	273	78	28,609 00	330,750 00	3,325	
Luzerne	7	250	50	13,420 00	132,500 00	980	3,065
Lycoming	11	274	312	134,615 00	1,721,754 00	3,535	34,960
McKean	1	300	50	25,500 00	250,000 00	* *	4,000
Mifflin	2	287	24	5,903 00	116,882 00	3,050	
Monroe	3	246	54	32,425 00	420,424 00	1,400	12,000
Montgomery	5	300	21	9,025 00	63,500 00	845	275
Montour	2	183	5	475 00	5,500 00	76	10
Northampton	3	269	7	2,554 00	25,550 00	715	
Northumberland	5	214	37	9,116 00	140,451 00	855	2,250
Philadelphia	22	240	453	267,633 00	1,283,066 00	4,308	1,277
Pike	1	200	15	5,000 00	100,000 00	2,000	
Perry	2	242	52	15,382 00	339,501 00	5,510	350
Potter	5	240	334	137,451 00	1,290,224 00	12,020	26,080
Schuylkill	3	256	24	5,966 00	95,300 00	2,040	30
Snyder	2	255	13	475 00	9,500 00	751	
Somerset	14	190	82	13,574 00	13,732 00	4,055	25
Sullivan	3	213	62	23,481 00	412,500 00	* * *	10,518
Susquehanna	10	280	260	106,586 00	824,650 00	1,300	17,397
Tioga	13	274	494	213,731 00	2,000,747 00	* * * * *	78,540
Union	1	300	13	1,200 00	15,000 00	200	
Wayne	2	249	502	223,432 00	2,194,000 00	* * *	54,230
Washington	1	*	*	100 00	400 00	25	
Wayne	5	292	145	51,490 00	470,000 00	* * * * *	18,000
Westmoreland	4	249	15	3,445 00	35,550 00	31,094	50
Wyoming	4	300	107	45,300 00	375,500 00	845	11,080
York	13	288	81	19,294 00	206,370 00	4,270	
Total for 1884	363	253	6,121	$2,416,327 00	$22,155,517 00	299,584	409,991
Total for 1883	364	276	5,065	2,115,843 00	20,419,197 00	223,775	199,490
Increase			1,056	$300,484 00	$1,736,320 00	75,809	210,051
Decrease	1	22					

MOROCCO AND OTHER LEATHER.

TABLE *showing the number of Establishments, Employés, Wages, &c., in the several counties of the State, as compiled from returns made to the Bureau, for the year ending December 31, 1884.*

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Chester,	1	314	5	$3,000	$12,000
Lycoming,	1	312	7	3,885	30,523
Luzerne,	1	308	55	39,400	225,000
Monroe,	1	300	50	18,000	125,000
Philadelphia,	32	300	1,885	967,789	4,558,073
Total, 1884,	36	300	2,002	$1,032,074	$4,950,596
Total, 1883,	38	249	2,028	1,152,229	5,254,407
Increase,	...	51			
Decrease,	2	.....	26	$120,155	$303,811
Boots and Shoes.					
Allegheny,	2	251	260	$125,225	$358,350
Bradford,	1	300	5	1,500	10,000
Bucks,	3	290	49	11,961	43,360
Cumberland,	1	282	80	20,000	86,000
Dauphin,	1	240	65	19,890	75,000
Erie,	1	250	50	13,000	40,000
Lancaster,	1	200	1	250	1,000
Lehigh,	3	274	316	69,650	346,000
Mifflin,	1	300	4	1,214	7,000
Northumberland,	1	250	25	7,700	30,000
Philadelphia,	44	287	3,559	1,559,169	3,917,780
Schuylkill,	4	263	143	37,227	173,227
Wayne,	1	300	50	22,079	90,996
York,	3	272	118	36,444	164,421
Total, 1884,	67	287	4,725	$1,925,309	$5,343,134
Total, 1883,	74	280	4,551	1,923,099	6,966,927
Increase,	...	7	174	$2,210	
Decrease,	7	.....	.....	.....	$1,623,793
Harness.					
Allegheny,	1	308	14	$8,580	$30,459
Berks,	1	300	2	624	2,000
Bradford,	1	280	2	450	1,000
Clinton,	1	309	3	1,040	3,500
Lancaster,	1	300	4	1,800	4,000
Philadelphia,	9	292	92	25,028	104,150
York,	1	200	3	1,000	3,037
Total, 1884,	15	292	120	$38,522	$148,146
Recapitulation.					
Tanneries,	393	253	6,121	$2,416,327	$22,185,517
Morocco and other leather,	36	300	2,002	1,032,074	4,950,596
Boots and shoes,	67	287	4,725	1,925,309	5,343,134
Leather harness,	15	292	120	38,522	148,146
Total,	511	283	12,968	$5,412,232	$32,627,393

NOTE—In 1883, trunks were reported with harness; this year they are reported separately, very little leather being used in their construction.

CLAY—PRODUCTS OF.

TABLE *showing the number of establishments, &c., in the several counties of the State, compiled from returns made to the Bureau, for the year ending December 31, 1884.*

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Bricks, common.					
Allegheny,	12	280	386	$94,633	$163,464
Armstrong,	2	255	24	7,300	11,000
Beaver,	2	208	24	5,758	13,000
Bedford,	1	50	8	625	1,500
Berks,	8	137	210	37,380	67,160
Blair,	2	162	25	6,600	11,000
Bucks,	4	121	18	4,160	8,560
Centre,	1	220	10	3,100	1,500
Chester,	7	165	78	15,556	35,473
Clinton,	1	200	45	13,000	20,000
Crawford,	1	108	26	3,650	6,680
Cumberland,	4	100	38	4,417	10,950
Dauphin,	5	125	121	36,490	51,450
Delaware,	4	195	120	32,073	55,200
Erie,	3	74	2,818	16,761	27,595
Franklin,	1	180	16	3,240	4,900
Huntingdon,	1	45	6	240	700
Indiana,	1	112	8	12	250
Lackawanna,	2	145	48	12,313	26,712
Lancaster,	8	112	126	23,285	43,712
Lehigh,	5	127	138	31,444	50,088
Luzerne,	5	184	60	14,733	23,007
Lycoming,	2	147	28	6,682	13,000
Montgomery,	13	150	126	27,372	53,238
Montour,	1	110	5	520	2,000
Northampton,	4	160	70	18,610	48,500
Northumberland,	2	101	8	1,129	2,320
Philadelphia,	37	201	2,217	701,297	1,463,788
Schuylkill,	2	101	18	2,474	4,850
Westmoreland,	3	73	92	2,072	5,980
York,	5	187	46	10,300	53,211
Total, 1884,	149	146	6,965	$1,137,226	$2,280,788
Fire Brick.					
Allegheny,	3	224	182	$158,683	$136,000
Armstrong,	1	230	24	6,869	3,557
Beaver,	3	154	12	19,218	3,557
Berks,	2	195	58	12,851	57,624
Cambria,	1	300	98	46,879	89,684
Chester,	1	300	6	2,400	8,000
Clearfield,	3	248	197	68,880	94,297
Delaware,	1	250	40	12,000	30,000
Fayette,	1	224	22	6,754	10,410
Indiana,	1	130	36	5,042	5,325
Lehigh,	3	233	472	18,725	70,998
Philadelphia,	8	292	194	90,791	255,995
Somerset,	1	173	278	57,450	126,886
Westmoreland,	2	275	105	37,923	51,800
Total, 1884,	31	259	1,724	$544,465	$944,133

CLAY—PRODUCTS OF—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Pottery.					
Allegheny,	4	300	148	$79,816	$196,206
Beaver,	4	300	224	89,827	173,687
Berks,	3	310	6	1,450	4,900
Chester,	4	265	74	19,508	34,500
Crawford,	1	150	4	725	1,050
Dauphin,	3	300	10	5,000	13,600
Erie,	1	310	7	3,200	20,000
Greene,	2	287	54	17,909	30,500
Indiana,	1	200	1	50	1,500
Jefferson,	1	225	3	600	800
Lancaster,	2	239	7	2,149	7,169
Lycoming,	1	300	2	900	3,000
Philadelphia,	6	258	199	71,860	122,890
Schuylkill,	1	304	3	500	1,200
Venango,	1	100	2	300	500
York,	1	224	3	1,064	7,000
Total, 1884,	36	254	747	$294,858	$616,502
Crucibles.					
Allegheny,	1	200	40	$45,000	$250,000
Philadelphia,	3	265	30	15,330	107,000
Total, 1884,	4	232	70	$60,330	$357,000
Terra-cotta.					
Adams,	1	300	3	$1,600	$4,400
Allegheny,	1	310	18	10,070	20,000
Berks,	1	300	15	7,500	25,000
Dauphin,	1	250	6	3,000	9,000
Erie,	1	100	2	300	800
Luzerne,	1	250	30	9,850	25,000
Philadelphia,	3	302	63	32,180	173,500
Venango,	1	122	7	1,157	3,000
Total, 1884,	10	242	144	$65,657	$260,700
Recapitulation.					
Bricks, common,	149	146	6,965	$1,137,226	$2,280,788
Bricks, fire,	31	259	1,724	544,465	944,133
Crucibles,	4	232	70	60,330	357,000
Pottery,	36	254	747	294,858	616,502
Terra-cotta,	10	242	144	65,657	260,700
Grand total, 1884,	230	227	9,650	$2,102,536	$4,459,123

SLATE.

TABLE *showing the number of slate quarries in the several counties of the State, with production, &c., as compiled from returns made to this Bureau for the year ending December 31, 1884.*

COUNTY.	Number of quarries.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of squares, (100 sq. ft.,) roofing slate made.	Number of school slates.	Number of square feet of blackboards.	Number of pieces of flagging, mantel, &c.	Value of product when amount is not stated.
Lehigh,	20	226	747	$258,033	201,802	1,788,826	63,190	41,420	$4,532,650
Northampton,	28	232	1,623	489,734	131,138	559,905	. . .	108,000	187,470
York,	5	236	66	21,358	8,813				
Total for 1884,	53	231	2,436	$769,125	341,753	Cases 3,000 2,348,731	63,190	149,420	$4,220,120
Total for 1883,	53	244	2,364	891,084	311,506	4,852,554	. .	144,401	
Increase over 1883,	. .	.	72	°	30,247	. . . . .	. . . .	5,019	
Decrease from 1883,	. .	13	. . .	$121,959					

In 1883, there were 1,388,101 square feet of blackboards manufactured and 600 fence posts. These products are included in the returns for 1884, in great part under the heading of flagging, mantels, &c., the returns from many of the operators being of such a nature that a correct division of products could not be made. There were returns from twelve operators who had kept their accounts in the money value of the product only; hence there was no account of product in square feet or pieces received from them, and of course none are credited in the table of product for 1884; the money value of their product is given only.

BREWERIES.

TABLE *showing the number of Breweries, production, &c., in the several counties of the State, compiled from returns made to this Bureau for the year ending December 31, 1884.*

COUNTIES.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	RAW MATERIAL USED.			Number of bottles used.	Number of barrels of 31 gallons, U. S. standard, of beer, ale, and porter.
					Bushels—malt.	Pounds—rice.	Pounds—hops		
Allegheny	20	251	394	$253,493	506,247	36,000	157,417		272,916
Beaver	3	146	7	3,121	4,439		3,849	8,300	2,841
Berks	4	306	85	48,484	124,977	168,420	50,287		57,393
Blair	7	73	18	7,170	12,485		6,212		8,963
Bradford	1	280	2	350	1,596		1,087	576	472
Cambria	5	230	24	10,267	24,809	530	16,256		7,536
Carbon	2	307	7	3,680	9,300		5,400		3,828
Centre	1	300	3	1,000	1,500				500
Clarion	1	300	3	720	1,300		820	720	425
Clearfield	2	133	4	740	1,791		1,113		649
Clinton	2	220	3	1,128	3,000				850
Crawford	4	242	30	12,575	12,609	44,275	3,950	9,560	6,185
Cumberland	1	300	1	480	2,065		1,180		869
Dauphin	4	233	41	12,618	33,529		33,529		26,012
Elk	2	300	8	2,015	4,716		1,860	2,512	2,076
Erie	6	269	42	13,894	45,464		4,487	11,010	24,845
Franklin	2	28	2	510	1,225		1,240		648
Indiana	1	109	4	1,698	2,921		2,319		916
Jefferson	3	124	7	1,140	5,050		1,500		1,630
Lackawanna	3	272	49	32,206	108,480		26,862		15,236
Lancaster	4	207	21	9,895	25,480		16,603		10,646
Lawrence	2	195	6	3,560	5,540		5,052		2,976
Lehigh	5	252	19	9,200	21,300		8,064	94,176	10,172
Luzerne	4	335	68	35,368	90,895		102,693		40,736
Lycoming	4	121	16	8,456	19,954		12,199		8,773
McKean	1	150	1	480	1,200		800	2,160	
Mifflin	1	311	3	1,092	1,340		844		585
Monroe	1	300	2		410		500		80
Montgomery	2	306	17	7,955	16,802		11,542	14,400	7,625
Montour	2	200	8	2,650	4,569		3,135		1,660
Northampton	4	300	80	33,510	38,971		10,444	12,300	12,710
Northumberland	1	300	7	3,120	7,700		4,555		3,747
Philadelphia	60	273	1,477	1,036,881	1,410,685		1,178,472	99,860	1,137,864
Potter	1	300	4	1,200	2,000		1,000	2,400	1,000
Schuylkill	5	247	94	50,996	88,314		79,752		48,278
Venango	1	300	4	2,000	1,480			2,880	1,200
Warren	1	300	5	3,500	10,400		7,240	4,320	3,000
Washington	1	69	3	400	1,020		600		376
Wayne	2	306	15	6,732	21,621		14,500		7,594
Westmoreland	1	100	2	500	1,200				600
York	4	242	9	3,728	14,880		1,946	40,000	3,886
Total for 1884	186	232	2,603	$1,631,812	2,692,264	249,125	1,779,249	305,174	1,738,298
Total for 1883	167	216	2,396	1,413,719	3,750,247	2,129,048	2,680,059	921,311	1,679,383
Increase over 1883	19	16	207	$218,093					58,915
Decrease from 1883					1,057,983	1,879,923	900,810	616,137	

With a decrease of 1,057,983 bushels of malt and 2,780,783 pounds of rice and hops, there was an increase of 58,915 barrels of beer, ale, and porter.

DISTILLED LIQUORS.

TABLE *showing the number of Distilleries, number of employés, production, &c., in the several counties of the State, compiled from returns made to this Bureau, for the year ending December 31, 1884.*

COUNTIES.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Number of bushels of grain used.	Number of barrels of liquor made.	Kind of liquor made.
Allegheny,	3	172	30	$13,900	69,278	7,223	Rye whisky.
Armstrong,	1	235	50	30,150	70,000	10,180	do.
Bedford,	2	225	8	1,750	5,800	460	do.
Beaver,	1	181	2	984	5,821	461	
Berks,	3	160	9	2,704	13,544	1,308	Whisky and Cologne spirits.
Centre,	2	182	1	320	1,373	112	Whisky.
Cumberland,	1	152	2	357	3,633	347	do.
Dauphin,	4	141	10	3,639	10,885	884	do.
Fayette,	2	256	14	7,269	59,085	5,023	do.
Franklin,	5	138	10	1,477	8,584	702	do.
Huntingdon,	1	200	6	. . . .	4,000	325	do.
Indiana,	1	127	4	762	7,738	127	do.
Lancaster,	4	110	8	1,656	7,904	608	do.
Lebanon,	1	170	1	180	211	166	do.
Lehigh,	2	86	2	50	15,606	57	Whisky and brandy.
Montour,	1	172	1	105	884	68	Whisky.
Philadelphia,	3	210	52	29,882	78,488	25,607	do.
Somerset,	3	270	7	1,623	9,696	798	do.
Union,	1	89	2	480	1,769	128	do.
Washington,	2	104	4	510	5,000	396	do.
Westmoreland,	3	165	15	6,140	22,440	2,575	do.
York,	1	183	7	1,510	11,034	989	do.
Total for 1884,	47	169	245	$105,448	351,771	58,544	
Total for 1883,	47	166	289	117,225	455,139	39,211	
Increase over 1883,	. . .	3	. . .	. . .	. .	19,333	
Decrease from 1883,	. .	. . .	44	$11,777	103,368		

The above table shows a decrease in the consumption of grain to the amount of 103,368 bushels, and an increase of barrels of liquor distilled of 19,333.

STREET RAILWAY LABOR.

TABLE *showing the Number and Kind of Employés, &c., in the Street Passenger Railway Service in the several counties of the State, for the year ending December 31, 1884.*

CITIES.	SUPERINTENDENT.			ASST. SUPERINTENDENT.			STABLE FOREMAN.			CONDUCTORS.			DRIVERS.			DRIVERS FARE BOX CAR.			HOSTLERS.		
	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.
Allentown,	6		$0 96	3	. .	$0 64	13	1	$1 43	10	2	$1 00	12	7	$1 16						
Allegheny,	16	2	3 50	. .			16	1	2 14	16	7	1 75	16	7	1 75	16	39	$1 95	12	22	$1 35
Altoona,	. . .	1	2 83	. .	. .	. .	12	1	1 75							16	10	1 75	14	2	1 50
Chester,	. .	. .		.		.	. . .	1	1 75							14	9	1 50	13	5	1 43
Easton,	4	1	50	15	1	1 50	16	1	1 15	16	3	1 00	16	3	1 00				16	2	1 00
Erie,	13	1	3 00		.		15	1	2 15				15	13	1 50		13		15	4	1 30
Harrisburg,	17	1	1 93		. .	.	17	1	1 16	16	8	1 38							17	4	1 00
Johnstown,	12	1	3 28	.			12	1	2 15							14	7	1 55	13	4	1 40
Philadelphia,	13	9	3 15	14	6	2 27	14	28	2 95	15	888	2 09	15	878	1 85	14	110	1 94	13	465	1 38
Pittsburgh,	12	9	3 44	10	6	2 32	13	12	1 86	16	127	1 88	16	118	1 74	14	60	1 89	13	117	1 32
Pittston,	3	1	66							15	1	1 75	15	1	1 50				15	1	1 36
Reading,	12	2	1 92			. .	11	1	1 15	14	11	1 33	10	4	70		.		12	5	1 15
Scranton,	14	1	2 50				16	1	1 66	14	12	1 54	14	12	1 45	.	.	.	12	5	1 33
Stroudsburg,	11	1	1 90			.	11	1	1 10	17	1	1 00	17	1	75						
Wilkes-Barre,	11	2	1 83	.	. .		15	2	1 16	15	4	1 16	15	8	1 00		.	.	15	3	1 16
Willlamsport,	15	1	2 00	15	1	2 00	15	1	1 40	.	. . .		15	6	1 40		.	. .	15	2	1 40

STREET RAILWAY LABOR—Continued.

CITIES.	FEEDERS.			CARHOUSEMEN.			BLACKSMITHS			TEAMSTERS.			HARNESS-MAKERS.			WATCHMEN.			FARE BOX COLLECTORS.			ALL OTHERS.		
	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.	Hours employed.	Number employed.	Daily wages.
Allegheny,	16	1	$1 75	11	1	$2 00	11	6	$2 50	11	2	$1 50	10	1	$1 67	12	2	$1 56				10	10	$1 86
Altoona,				10	1	1 67	10	1	1 67							12	1	1 50				14	1	1 00
Chester,							10	1	2 00							12	1	1 43				10	1	1 50
Johnstown,				12	1	1 29	10	2	1 68							12	1	1 50						
Philadelphia,	11	61	1 66	10	101	1 94	10	88	2 35	10	21	1 67	10	21	1 95	12	69	1 57	11	19	2 55	10	351	2 03
Pittsburgh,	13	9	1 58	11	16	1 77	10	31	2 30	10	7	1 48	10	4	1 76	13	17	1 56	12	6	1 59	10	64	1 75
Reading,							10	1	1 43	13	1	1 16	11	1	1 15	12	1	1 15				10	1	2 00
Scranton,	12	2	1 33	12	2	1 33				10	2	1 00				11	1	1 33						
Stroudsburg,																								
Williamsport,				15	1	1 40																		

STREET PASSENGER RAILWAYS.

TABLE *showing the number of Street Passenger Railways in the several counties of the State, Number of Persons Employed, &c., from returns made to the Bureau, for the year ending December 31, 1884.*

Number of lines operated.	Name of Company.	Average number of hours per day run.	Number of persons employed.	Amount paid in wages.
1	Allentown,	18	12	$4,240
2	Allegheny,	18	102	65,542
1	Altoona,	17	17	10,670
1	Chester,	17	20	10,237
1	Easton,	18	9	3,007
1	Erie,	15	18	9,982
1	Harrisburg,	16	14	6,248
1	Johnstown,	17	16	9,503
19	Philadelphia,	19	3,258	1,825,464
9	Pittsburgh,	19	631	373,643
1	Pittston,	15	5	1,800
2	Reading,	17	29	12,651
1	Scranton,	16	40	17,613
1	Stroudsburg,	17	6	2,350
2	Wilkes-Barre,	15	18	7,761
1	Williamsport,	15	12	5,500
45	Total,	17	4,207	$2,366,211

MANUFACTURES—MISCELLANEOUS.

TABLE *showing the number of establishments, number of days in operation, &c., of the minor industries of the State, compiled from returns made to this Bureau, for the year ending December 31, 1884.*

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Baskets.					
Philadelphia,	2	300	4	$1,600	$3,054
York,	1	275	2	500	1,800
Total, 1884,	3	288	6	$2,100	$4,854
Baby Carriages.					
Erie,	1	240	15	$9,000	$34,000
Philadelphia,	2	300	50	24,530	119,919
Total, 1884,	3	280	65	$33,530	$153,919
Brass Goods.					
Allegheny,	8	302	260	$171,131	$1,027,905
Lackawanna,	1	300	20	7,500	20,000
Northampton,	3	301	77	29,799	83,892
Philadelphia,	20	298	738	352,227	1,167,707
Total, 1884,	32	300	1,095	$560,657	$2,299,504
Brooms.					
Adams,	2	225	45	$20,015	$70,012
Allegheny,	3	236	149	36,331	135,665
Total,	5	230	194	$56,346	$205,677
Brushes.					
Allegheny,	2	300	20	$8,500	$28,000
Berks,	2	275	13	3,350	10,000
Delaware,	1	300	6	2,000	72,240
Lehigh,	1	250	5	1,200	4,000
Montgomery,	2	250	74	22,124	55,000
Philadelphia,	11	253	553	79,462	282,321
Venango,	1	294	28	6,165	25,000
Total, 1884,	20	274	699	$122,801	$476,561
Buttons.					
Philadelphia,	8	273	326	$95,270	$210,453
Caskets and Coffins.					
Dauphin,	1	310	50	$17,933	$70,000
Erie,	1	300	30	11,091	21,781
Lackawanna,	1	307	35	16,606	31,867
Philadelphia,	1	306	45	18,000	50,000
Total, 1884,	4	306	160	$63,630	$173,648
Chemicals.					
Erie,	1	300	13	$5,917	$32,803
Huntingdon,	1	200	25	12,000	47,916
Philadelphia,	3	310	600	337,650	2,401,600
Total, 1884,	5	300	638	$355,567	$2,482,319

MANUFACTURES—MISCELLANEOUS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Cigars.					
Adams,	1	303	80	$17,000	$40,000
Allegheny,	3	300	61	27,493	372,840
Berks,	5	275	336	78,136	335,576
Blair,	1	300	5	1,418	4,436
Bucks,	3	237	71	10,500	39,600
Dauphin,	4	300	29	10,575	38,695
Erie,	1	300	21	4,928	10,830
Lancaster,	2	250	31	6,300	14,200
Lebanon,	1	300	30	7,884	5,545
Lehigh,	1	290	40	12,500	48,600
Philadelphia,	17	300	1,203	524,227	1,622,742
Snyder,	1	275	2	193	926
Tioga,	1	226	23	9,105	29,704
Warren,	1	295	9	4,500	12,000
York,	2	300	12	4,063	12,203
Total, 1884,	44	375	1,953	$718,912	$2,587,897
Combs.					
Lancaster,	1	305	39	$12,375	$27,910
Philadelphia,	2	265	18	6,580	16,858
Total, 1884,	3	285	57	$18,955	$44,768
Cordage.					
Allegheny,	2	300	24	$7,900	$46,100
Beaver,	1	240	125	28,000	120,000
Berks,	1	290	95	15,000	125,000
Bucks,	1	300	14	2,000	10,000
Lancaster,	1	300	1	91	800
Northampton,	1	116	20	3,275	42,350
Philadelphia,	8	260	486	178,865	1,770,837
Total, 1884,	15	270	765	$235,131	$2,115,087
Cork.					
Lancaster,	3	303	158	$31,490	$331,500
Philadelphia,	4	302	60	26,210	91,565
Total, 1884,	7	303	218	$57,700	$423,065
Dyers.					
Philadelphia,	29	253	1,068	$498,743	$1,683,464
Envelopes.					
Philadelphia,	3	305	385	$130,000	$838,000
Glass Sand.					
Mifflin,	2	277	88	$24,750	$64,000
Huntingdon,	2	263	28	9,077	16,265
Total, 1884,	4	270	116	$33,827	$80,265
Glue.					
Allegheny,	1	300	115	$42,969	$175,796
Lancaster,	2	130	7	675	5,020
Total, 1884,	3	215	122	$43,644	$180,816
Glycerine, Nitro.					
Crawford,	1	310	26	$28,423	$146,329
McKean,	1	310	9	6,356	45,685
Total, 1884,	2	310	35	$34,779	$192,014

MANUFACTURES—MISCELLANEOUS - Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Gold Leaf					
Philadelphia,	1	282	204	$76,815	$359,891
Hair-Pins.					
Philadelphia,	1	310	10	$3,000	$10,000
Hats and Caps.					
Berks,	13	243	778	$236,404	$1,134,423
Lancaster,	3	180	82	16,100	77,000
Philadelphia,	29	294	1,679	753,909	2,096,693
Total, 1884,	45	239	$2,539	$1,006,413	$3,308,116
Lead and Lead Shot.					
Philadelphia,	3	304	47	$30,405	$451,350
Malt.					
Allegheny,	3	268	16	$8,000	$80,000
Erie,	2	250	33	20,327	215,000
Lancaster,	1	203	10	3,000	25,000
Northampton,	1	200	11	3,600	60,000
Philadelphia,	4	216	82	36,391	531,105
York,	1	240	8	2,500	20,120
Total, 1884,	12	229	160	$73,818	$931,225
Mantels, Slate.					
Erie,	1	310	3	$1,751	$3,457
Philadelphia,	2	301	43	22,800	95,000
Total, 1884,	3	305	46	$24,551	$98,457
Mirrors and Picture-Frames.					
Philadelphia,	1	309	289	$134,020	$351,699
Mixed Goods.					
Allegheny,	1	200	1	$400	$600
Bradford,	1	313	2	500	5,000
Carbon,	1	300	10	3,650	30,000
Chester,	1	200	18	2,500	6,500
Monroe,	1	303	32	16,626	159,300
Northampton,	2	300	25	4,650	11,350
Philadelphia,	10	300	572	197,699	1,762,035
Wayne,	2	290	32	9,450	46,000
Total, 1884,	19	300	682	$235,475	$2,020,785
Musical Instruments.					
Adams,	1	300	1	$500	$1,900
Erie,	3	300	106	9,976	148,052
Lancaster,	1	300	20	5,995	24,250
Northampton,	1	300	6	2,700	6,582
Northumberland,	1	300	8	2,090	6,994
Philadelphia,	5	292	137	82,674	215,126
York,	1	300	45	20,833	60,460
Total, 1884,	13	300	323	124,768	463,364
Oil—other than Petroleum.					
Allegheny,	5	305	21	$11,491	$140,356
Philadelphia,	1	308	5	2,000	50,000
Total, 1884,	6	306	26	$13,491	$190,356

MANUFACTURES—MISCELLANEOUS Continued.

COUNTY.	Number of establishments.	Number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Oil Cloths.					
Delaware,	1	309	30	$11,992	$55,000
Philadelphia,	2	280	527	266,600	1,630,000
Total, 1884,	3	299	557	$278,592	$1,685,000
Paper and Paper Goods.					
Allegheny,	2	206	104	$15,932	$87,000
Beaver,	1	240	23	7,500	40,000
Berks,	1	310	25	5,775	30,000
Blair,	1	288	90	39,681	201,069
Bucks,	2	252	122	43,888	292,998
Chester,	17	253	123	39,808	260,700
Columbia,	1	300	7	3,000	23,200
Cumberland,	3	300	190	56,364	222,395
Delaware,	2	285	15	6,000	20,000
Erie,	1	280	100	53,000	450,000
Franklin,	2	283	48	9,723	42,743
Indiana,	2	258	18	5,971	20,122
Lancaster,	1	300	21	6,300	49,500
Luzerne,	2	230	34	12,500	58,259
Lycoming,	1	156	10	2,395	5,061
Montgomery,	3	280	250	116,354	589,617
Northampton,	2	260	19	4,939	17,340
Philadelphia,	14	280	1,051	426,556	2,254,385
Westmoreland,	2	290	36	15,214	76,774
York,	2	304	195	66,000	580,000
Total, 1884,	62	272	2,481	$936,900	$5,321,163
Paints.					
Allegheny,	5	277	58	$26,400	$197,000
Berks,	1	300	18	12,000	150,000
Carbon,	1	300	65	23,036	71,660
Columbia,	1	84	2	500	5,000
Cumberland,	1	104	1	148	950
Lawrence,	1	210	6	2,000	3,000
Luzerne,	1	200	15	5,000	11,000
Lycoming,	1	300	9	7,610	128,000
Philadelphia,	1	309	29	21,478	132,171
York,	1	45	1	624	1,600
Total, 1884,	14	241	204	$98,796	$700,381
Plated Ware.					
Allegheny,	4	275	102	$39,921	$92,227
Philadelphia,	8	269	118	64,837	143,002
Total, 1884,	12	277	220	$104,758	$235,229
Powder.					
Erie,	1	160	15	$3,426	$15,000
Lackawanna,	2	150	81	44,184	196,191
Luzerne,	3	264	145	75,412	376,959
Northumberland,	1	236	4	2,703	10,000
Schuylkill,	2	269	143	44,477	195,405
York,	1	133	5	1,565	2,920
Total, 1884,	10	202	394	$171,767	$796,475
Salt.					
Allegheny,	3	270	49	$25,733	$120,468
Washington,	1	160	2	338	1,000
Total, 1884,	4	215	51	$26,071	$121,468

MANUFACTURES—MISCELLANEOUS—Continued.

COUNTY.	Number of establishments.	Average number of days in operation.	Number of persons employed.	Amount paid in wages.	Value of product.
Show-Cases.					
Erie,	1	287	30	$13,000	$35,000
Philadelphia,	4	300	30	16,633	55,088
Total, 1884,	5	293	60	$29,633	$90,088
Soap and Candles.					
Allegheny,	3	300	21	$4,276	$52,026
Philadelphia,	17	305	371	164,845	1,528,066
Schuylkill,	2	290	14	4,300	38,504
Total, 1884,	22	300	406	$173,421	$1,618,596
Sugar Refineries.					
Philadelphia,	6	193	640	$309,912	$9,502,641
Type Foundries.					
Allegheny,	1	305	4	$1,200	$4,000
Philadelphia,	3	308	306	167,369	420,000
Total, 1884,	4	306	310	$168,569	$424,000
Umbrellas and Parasols.					
Philadelphia,	9	266	408	$145,668	$520,978
Watch Cases.					
Philadelphia,	6	289	554	$229,469	$1,062,806
White Lead.					
Allegheny,	8	300	841	$386,551	$3,411,362
Philadelphia,	3	300	231	125,756	1,212,402
Washington,	1	150	4	2,000	25,000
Total, 1884,	12	300	1,076	$514,307	$4,648,764
Whips.					
Philadelphia,	2	256	4	$813	$4,483
York,	3	292	61	15,900	76,500
Total, 1884,	5	275	65	$16,713	$80,983
Zinc.					
Lehigh,	1	316	93	$35,000	$170,000

PULLMAN—ITS SOCIAL, ECONOMIC, AND INDUSTRIAL CONDITIONS.

DEPARTMENT OF INTERNAL AFFAIRS,
BUREAU OF INDUSTRIAL STATISTICS, *May 1, 1885.*

Honorable J. SIMPSON AFRICA,
Secretary of Internal Affairs:

SIR: In accordance with a resolution passed at the National convention of the State Labor Statistical Bureaus, held at St. Louis, Mo., in the month of June last, and by your direction, I beg leave to submit the following report of the result of my observations during a visit to Pullman, Illinois, in the month of September last.

The town of Pullman is located on the western shore of Lake Calumet, on the line of the Illinois Central railroad, about ten miles distant from Chicago. About four thousand acres of land were purchased by the Pullman Palace Car Company, at the instance of George M. Pullman, its president, and the erection of the shops of the company and dwelling-houses for its employés commenced in the month of May, 1880. It contains now in the neighborhood of nine thousand inhabitants, and the population is steadily increasing. It is not incorporated as a borough or city, but is owned in its entirety by the Pullman company, by whom all the buildings, public and private, are erected. The streets have been opened and paved, a complete and almost perfect system of drainage established, and, at a large expense, water and gas have been supplied by the company. Whilst its growth, rapid as it has been, is not phenomenal in American progress, yet this springing up of so large a town, under the same conditions, has no parallel in our history. The building material is generally of brick, except in several of the public edifices, in which a handsome green stone procured in Philadelphia is used. The houses are supplied with water, gas, and other modern improvements. The architecture is varied and pleasing; the streets are broad, kept in the best of order, and through their entire length shade trees have been planted. There is a good hotel, market-house, theater, library, school-house, and public grounds, all not only convenient but elegant in design and structure, and kept in excellent repair. Everything that is deemed necessary or appurtenant to a prosperous modern town is at Pullman. To all outward appearances, no more desirable place of residence could be wished for by families of moderate means.

Owing to the fact that the town and its appurtenances are under one ownership and one control, that the citizens have neither responsibility nor voice in its management, except in the matter of school direction, it has

been the subject of much adverse criticism on the part of the politician, the social theorist, and the Utopian dreamer. The idea of Pullman is declared to be "un-American," as an offer of the "gilded cage" in exchange for liberty, as subversive of the spirit of American freemen, &c. Whilst good intentions on the part of the founders are ungraciously conceded, yet they are in effect charged with the rearing of men "as underlings and with the spirit of menials." The town has proven a profitable investment to the projector, and it is therefore suggested that the philanthropy of the enterprise is questionable. The criticisms made are hardly fair either to Mr. Pullman or the Pullman Palace Car Company. If the intent was to build a model town as a home where ideal workingmen could reach the highest standard of human development, under a fostering paternal control, some of the objections made might, perhaps, have force. But the town was built for no such purpose. The Pullman Palace Car Company is a business association, established and carried on for manufacturing purposes, with the primary view of making a profit to the shareholders. They are neither professional philanthropists nor propagandists of new social theories; they make no pretense of being anything but a business association. The president of the company, Mr. George M. Pullman, was, in his earlier years, a practical mechanic, and has, through his entire career, taken great interest in the welfare of the laboring classes. He understands, and has long understood, that whilst the interest of employer and employé is in many respects identical, each is inclined to view the other with suspicion. Whilst the laborer, on the one hand, charges the capitalist with being oppressive and disregardful of his interest, the capitalist, on the contrary, often regards his employé as ungrateful for any benefit conferred, and with being a covert, if not an open, enemy. Misappreciation of motives oftentimes engenders serious misunderstanding, and when capital and labor, acting in concert, would be almost omnipotent, mutual recrimination produces open enmity, resulting in hopeless bankruptcy to the capitalist, and want, degradation, and crime to the laborer. Difficulties between employer and employé are not confined to periods of business depression. In time of great prosperity and high wages, the employer charges the employé with being careless and improvident, idle when most needed, and as wasting his surplus earnings in riotous dissipation. The employé, on his part, declares that the employer only regards him as a human machine from whose bone and sinew a fixed amount of money can be made; that his work obtained, all further interest in him ceases; that whilst prosperity gives to the capitalist the refinements and luxuries of life, the utmost limit of his aspiration is to be well fed and comfortably clad. To successfully solve the perplexing questions arising between capital and labor, has baffled the ingenuity of ages. That the condition of the laborer, in times of prosperity as well as adversity, should be improved is conceded by all those who have given any thought to the subject. To elevate the condition of the laborer, intellectually, morally, socially, and physically, is

what was, and is, proposed by Mr. Pullman. The problem he undertook to solve was to accomplish such an end, and at the same time obtain a result of direct pecuniary advantage to the capitalist. The end he had in view was not to build a model town with an absolutely perfect system of municipal government. It was to demostrate the practicability and advantage to the capitalist of elevating the laborer out of existing conditions. He knew that gifts of money, houses, or land would be of even doubtful advantage to the recipients, and could have no general good effect whatever. It would, if felt at all, be productive of increasing discontent in other laboring communities. The Pullman Palace Car Company was established, like other manufacturing and mining industries, for the purpose of profit, not as a disburser of charity. The laborer only asks to be regarded as a human being, not a mere machine, and to be paid just wages for services rendered. He demands no charity, simply his due. Mr. Pullman understood his relations as a business manager to his company, and at the same time appreciated the existent evils under which the wage-worker suffers. He has attempted in the erection of the town of Pullman to advance the general business interests of the one, and to ameliorate the condition of the other.

Whether the experiment made is successful in the present and promises still greater results in the future, is one of absorbing interest to both capital and labor. If, by the general adoption of the system, the investment of the capitalist would prove more renumerative, and the wage-worker be elevated to a higher level, intellectually, morally, socially, and physically, then it is more than idle for the visionary theorist to cry "God forbid." It is admitted that as a financial investment, it has proven a success to the projector. If this be fully established, the selfish instinct of capital will induce imitation. It cannot be justly charged against the Pullman company that it has established, or is attempting to establish, any new relations between capital and labor which would tend to degrade, or, by artful means, further oppress the wage-worker. It proposed to build a manufacturing establishment on its own property, and to erect in connection therewith the necessary improvements for its successful operation. Among such improvements the erection of workingmen's houses was a necessary incident. In this it was in no wise peculiar. It is a rule adopted by large manufacturing and mining establishments of sufficient capital, not only in this country but the world over, to build tenant houses for their workmen, and in so doing it has resulted in advantage to labor as well as capital. In selecting a site for its shops, not only was the business view considered, but the healthfulness of the location was made a point of primary importance. The Pullman company erected, according to general custom, houses for its workmen, for the occupancy of which a fair rent is paid; but unlike the ugly, cheap, and inconvenient tenant houses so often provided, and for the use of which high rentals are demanded, its houses are models of architectural beauty, and have every convenience and comfort. The tenant

houses of workmen throughout the United States are not, as a rule, inviting places for habitation. In the cities they are too often located in small alleys where the foul odors arising from accumuluted filth and confined air predominate. When located in country places, the houses are often the centers of piles of rubbish, with frequently inconvenient, squalid, unhealthy interiors. All this is reversed at Pullman. There the houses are located on broad, well macadamized streets, where the sprinkler in hot weather is kept constantly in motion; the trees planted will, in a short time, produce a luxurious shade; grounds are marked off to each dwelling, grass plats are in front of every door, and pure water and gas supplied to each family. A general healthfulness is maintained by as perfect a system of drainage as human ingenuity has been able to devise. There is no more interference in Pullman than elsewhere in the details of family life, but a more neighborly example, as well as the influence cast around the inhabitants by the company, engender habits of cleanliness in their living, houses, and persons.

But the company has not stopped here. It has built good stores, a hotel, market-house, school-house, and supplied the town with steam fire engines. It has also built a small theater in which the tastes of the inhabitants are catered to as in other places, the only restriction being one which ought always to be made, that performances degrading or immoral are not permitted. A public library has been well stocked with books, some six thousand volumes, by Mr. Pullman, and public parks and grounds are provided for recreation and athletic exercises. The question again presents itself, Is all this calculated to elevate the wage-worker, or is it "rearing men as underlings and with the spirit of menials?" If it has the latter effect, it is hard for the ordinary practical mind to compass the reason. Instead of displaying the utter, not to say criminal, carelessness of many manufacturing and mining companies who consider their full duty accomplished after renting, at exorbitant rates, cheap, ill-constructed, unhealthy tenements, the Pullman company has inaugurated a system where, by the exercise of no greater degree of control of personal liberty, the physical welfare and comfort of the workman are regarded; he is surrounded by healthy moral influences; his intellectual nature is stimulated, and his sense of beauty fostered and gratified. But it is urged that the citizen has no part in the management and control of the town, and his position is, therefore, un-American. It is said the spirit of the company is everywhere prevalent, and that it wields a powerful influence. This objection superficially seems to have some point, but is it not the fact that the residents of Pullman have fully as much, if not more, control than the citizens of other communities of workmen residing on the property of their employers? It must be borne in mind that the town was built appurtenant to the shops as a dwelling-place for the workmen. As it is owned by the company, by what process of reasoning can it be shown that it should pass over its management to other hands? It only claims and exercises a control which applies to its own undoubted

rights. On its property adjacent to its work, it has the right to refuse to permit, as a matter of police regulation, the sale of intoxicating liquors. It does not, however, attempt to enforce total abstinence. There is a bar at the hotel, but it is not deemed advisable or necessary to foster and encourage groggeries, and it refuses to rent its houses for such purposes. It simply exercises a legitimate control over its own, and in the same degree as is exercised by many property-holders elsewhere. Its limit of jurisdiction is strictly confined to an ordinary management of its own estate. Why this should be regarded as "un-American" is incomprehensible, unless we admit that it is an idea peculiar to Americans that the right exists in them to manage other people's property. As has been said before, the schoolhouses are built by the company, but the education of the scholars is in the hands of the people. There is no accusation that any control, or attempted control, or interference is made with the political or religious belief of any one, and Pullman, like other places, has its quota of political clubs of all parties. The community is composed of all shades of religious belief, and most illogically, after the charge of too great interference, the company is accused of having no regard for the spiritual welfare of the people. Were it to interfere, there might be just cause of complaint. Upon no point are men more justly sensitive than in interference in matters of religion. The company appreciates this, and permits, in religious matters, absolute freedom without even the shadow of coercion or restraint. There is no discouragement or hindrance. A church has been erected, but the inhabitants have full liberty to worship God according to the dictates of their own consciences.

It is urged as against Pullman that the workmen are so controlled by the company that they are compelled to submit to any terms which may be demanded, and their personal liberty is thereby impaired. There is no accusation of this kind made, but the danger is feared and foreshadowed. Pullman does not differ from other places in this respect. The action of men the world over is, to a great extent, controlled by their surroundings, and doubtless it is so in Pullman, but not in any greater degree than at other points where laborers work without any of the advantages found there. To render men independent of their environments is a task human ingenuity has not yet achieved.

It is also urged that it is a laudable ambition for American workmen to own their own houses. This is true, as an independent proposition, yet it would be hard to show any moral or social obligation for the Pullman Palace Car Company, or any other manufacturing or mining organization, to build houses adjacent to their establishments for sale. Laborers, as a rule, are not able to purchase homes, but here an opportunity is offered by which the means to do so can be obtained. The main question remains: Has Mr. Pullman shown beyond cavil that it may be to the pecuniary interest of the capitalist to elevate the condition of the wage-worker? If so, then he deserves, and will receive, the thanks both of the capitalist and

laborer, and their sympathy and coöperation in his enterprise. That he has lowered the wage-worker in the scale of humanity by offering him a "gilded cage," or has in any way interfered with his civil, political, or religious rights, or fostered un-American ideas of government, is not and cannot be shown.

That any one searching for complaints and dissatisfaction should discover fault-finders at Pullman, is not reason for any surprise. It is an element in human nature that discontent should be found in the palace as well as in the hovel. The Pullman Palace Car Company may not have attained absolute perfection, but it has made a step far in advance of any previous effort of a like nature. To the extent of its success at Pullman, its example can be imitated in an equal or less degree by other large manufacturing establishments. But the scheme of the Pullman company, when fully developed, will itself be a sufficient answer to the carping objections made. The location of the town was chosen in view of the building of a large city, both as a manufacturing center and as a shipping point by railroad and water. Inducements are being offered to other manufacturers to locate there, in order that industries may be diversified, and the people not be dependent on any one enterprise. It is proposed to build houses, stores, &c., on an adjoining tract of ground on the same general plan of architecture. The houses so built it is intended shall be sold to workmen, at reasonable prices and upon favorable terms as to time of payment; and, in order to stimulate them in a laudable ambition to purchase homes, encouragement is given them to make deposits in a savings bank for that purpose. It is hoped that in time the population of the town will reach one hundred thousand and upward. With a diversified ownership, incorporation as a borough or city will naturally follow. To effect the purposes in view, the absolute control of the property has up to this time, for many reasons, remained under one management. Whether the hopes of Mr. Pullman for the future of his city will be realized, time alone will determine. The example he has set of an active interest in the welfare of the wage-worker, must, in itself, be productive of much good. He is still earnest and hopeful. His enthusiasm may and ought to inspire others. That the capitalist and laborer should, whilst respecting each other's rights, act in concert, is a consummation devoutly to be wished. If such end can be attained, it will be effected by such efforts as are now being made by Mr. Pullman and the Pullman Palace Car Company.

JOEL B. McCAMANT,
Chief of Bureau.

LOOKING EAST FROM THE ARCADE.

JOINT REPORT OF THE COMMISSIONERS OF INDUSTRIAL STATISTICS ON THE CITY OF PULLMAN.

At the annual convention of the chiefs and commissioners of the several bureaus of statistics of labor in the United States, held at St. Louis in June, 1884, it was determined to make a full and exhaustive investigation of the economic experiment conducted by Pullman's Palace Car Company on the plan projected by Mr. George M. Pullman, the president.

In carrying out this determination, the convention met at Pullman, Illinois, in September following, and for three days studied all the economic, sanitary, industrial, moral, and social conditions of the city.

Every facility was afforded for the closest scrutiny of every feature and phase of any and all the affairs the members of the convention saw fit to examine. The results of their investigations are embodied in this report, which is presented as a joint report through the annual reports of the bureaus represented.

We have availed ourselves of material furnished the press by Duane Doty, Esq., a gentleman connected with the educational work of Pullman, and by other writers, but our report is chiefly the result of our own observations of things and conditions as we found them.

Our object in making the investigation was to give to the manufacturers and capitalists of our respective States official information relative to one of the most attractive experiments of the age seeking to harmonize the interests of labor and capital. It is no part of our duty to eulogize individuals; we have endeavored to learn results.

The enterprise of Herr Krupp at Essen; the philanthropy of M. Godin in the establishment of the Familistére at Guise, France; the humanity of Sir Titus Salt, that brought into existence the industrial town of Saltaire, in Yorkshire, England; and the broad Christian inspiration which resulted in the founding of Pullman have given the world, in the four greatest manufacturing countries, four magnificent schemes for the uplifting of a large portion of the people seeking a living through wages.

In all the countries named there have been many other experiments worth a careful study of all interested in social advancement. This is thoroughly true of our own country, and we might call attention with justice to the success at Peace Dale, Rhode Island, at St. Johnsbury, Vermont, at Willimantic and Manchester, Connecticut, and at other points. But, for comprehensive plan, for careful recognition of all the strong points, and the fullest anticipation of all weak features, for the beauty of the executed plan, for the financial and social success thereof, Pullman city, as the outgrowth of the newest of the great manufacturing nations, stands at the head.

History.

The commissioners had no opportunity to consult Mr. Pullman personally, he being away at the time of our investigation, and we have, there-

fore, taken such statements of fact, as appear in our report, from documents already before the public.

Pullman's Palace Car Company was founded in 1867 with a capital of $1,000,000; its extended operations have been conducted on the strictest business principles, and have, from time to time, necessitated increases in its capital stock, until now its capital represents nearly $16,000,000, and $2,000,000 in debenture bonds; its palace cars are operated on upward of seventy thousand miles of railway in America and Europe. Its capital stock has been paid in dollar for dollar, and no watering processes have ever entered into the financial operations of the company. Its dividends have been regular and ample, and its affairs conducted on the same scientific basis that has characterized the construction of the works.

Four or five years ago Mr. Pullman determined to bring the greater portion of the works of the company into one locality. To accomplish, this he must leave the great cities for many reasons, and yet it was essential that a site should be selected where communication could be had with the whole country, and near some metropolitan place like Chicago. He wished above all things to remove his workmen from the close quarters of a great city, and give them the healthful benefits of good air, good drainage, and good water, and where they would be free, so far as it would lie in the power of management to keep them free, from the many seductive influences of a great town.

He was fortunate in securing about four thousand acres of land on the Illinois Central railroad, a dozen miles to the south of Chicago. This land was located in the town of Hyde Park, and here he built his city.

The Site.

The city is situated upon the west shore of Lake Calumet, which is a shallow body of water three and a half miles long by a mile and a half in width. This lake drains into Lake Michigan through the Calumet river, Lake Michigan being not more than three miles distant. The site of that portion of the city now fully covered with buildings is from eight to fourteen feet above the level of Lake Calumet. The soil is a drift deposit of tough blue clay ninety feet in depth, resting upon lime rock. The land gradually rises to the north and west to an elevation of twenty-five feet above Lake Calumet, this lake being usually from three to five inches higher than Lake Michigan. There is no land of a marshy character in this neighborhood. The bottom of Lake Calumet is of hard blue clay, from which the best cream-colored brick are made. It was deemed unwise to permit any sewage to flow into Lake Calumet, so the system of drainage adopted is what is known as the *separate* one.

On the 25th day of May, 1880, ground was first broken for the building of the Palace car works, and the city of Pullman. The land was an open and not over-promising prairie.

The first efforts were directed toward the scientific drainage of the fu-

WATER TOWER AND CORLISS ENGINE ROOM.

products at Pullman are carefully utilized, being transformed by vital chemistry into luxuriant vegetable forms.

This farm is now a source of profit, and its products are sold in the markets of the country, from Boston to New Orleans.

The Buildings.

With the scientific drainage and sewage system, in the construction of which nearly one million dollars ($1,000,000) were expended underneath the ground before anything appeared on its surface, came the erection of the works and the dwellings of the town. It is sufficient to say that the same care exercised in guarding the future health of the place has been bestowed in the erection of works and dwellings.

In the center stands the water tower, which takes a supply of water from Lake Michigan and distributes it through the town. Underneath this immense tower is the reservoir into which flows the sub-sewage of the place as described. Around the tower are located the principal works; to the south and north of the works, chiefly to the south, are the dwellings.

The appearance from the railroad as one approaches from Chicago is effective. The neat station; and the water tower and the works in front; the park and artificial lakes intervening; to the right a picturesque hotel backed by pretty dwellings; the arcade containing stores, library, theater, offices, etc.; still further to the right, and beyond, a church which fits into the landscape with artistic effect.

The laying out of the whole town has been under the guidance of skilled architects aided by civil engineers and landscape gardeners.

The dwellings present a great variety of architecture, yet give harmonious effects. They are not built like the tenement houses of ordinary manufacturing towns, where sameness kills beauty and makes the surroundings tame, but a successful effort has been made to give diversity to architectural design.

The streets are wide, well built, and wherever possible parked. The lawns are kept in order by the company; the shade trees are cared for, and all the police work is done under competent supervision.

Every care has been taken to secure convenience inside as well as outside the dwellings. The cheapest tenement is supplied with gas and water and garbage outlets. The housekeeper throws the garbage into a specified receptacle and has no more care of it.

The testimony of every woman we met was that housekeeping was rendered far more easy in Pullman than in any other place. In fact the women were in love with the place; its purity of air, cleanliness of houses and streets, and lessened household burdens, are advantages over their former residences which brought out the heartiest expressions of approval. The women of the comparatively poor bear most of the drudgery of life, enjoy the least of pleasures, and are most narrowly circumscribed, with little change in cares, scenes, or social surrondings. Pullman has really wrought a greater change for the women than for any other class of its dwellers.

All the works and shops are kept in the neatest possible order. The planing rooms are as free from dust as the street, blowers and exhaust fans taking away all shavings, dust, and *débris* as fast as it accumulates. One notices everywhere the endeavor to save time and space in the construction of goods. As an illustration of the science which enters into manufacture, we need only cite the shops where freight cars are built. All the timber is taken in in lengths at one end and is never turned around until it finds its proper place in a completed freight car, being carried constantly from one process to another in a direct line from its reception at one end to its utilization at the other.

There are 1,520 brick tenements in houses and flats. The frontage of all the buildings extends along five miles of solid paved streets, and there are fourteen miles of railroad track laid for the use of those in the shops and the town. The buildings are of brick or stone.

Industries.

The industries carried on and for which the city was built comprise the manufacture of Pullman palace cars, and all classes of passenger and freight cars.

The Pullman car-wheel works, the Chicago Drop Forge Company's works, the Spanish-American curled hair factory, the Pullman Iron and Steel Company for the manufacture of iron and steel and of railroad spikes, and other works which are collateral to the principal business of the place, are located here.

The Allen paper car-wheel works, and the Union foundry for making car wheels, car castings, and architectural and general castings have been conveniently located at Pullman.

Among the manufactures of the place should be mentioned that of brick. The Pullman company's yards turned out the past year about twenty millions of brick. The ice industry is also growing in importance. There is also an extensive carpenter's shop by means of which the erection of dwellings, public buildings, etc., here and in other places may contribute to the industries of Pullman.

Gradually the manufacture of all the parts necessary to the construction of cars in every condition is being added to the enterprise of the town. A laundry is being established for cleansing the vast quantities of linen used in the palace car service, which will give employment to women; it is the policy of the company to encourage the employment of women and young persons.

Population.

The rapid growth of Pullman is exhibited in the following tabular statement of the several enumerations of the population that have been made:

MAIN BUILDING, PULLMAN CAR WORKS.

Table of Nine Enumerations.

DATES OF TAKING THE CENSUS.	Families and households.	No. of men.	No. of women.	No. of children.	Total population.
January 1, 1881, ...	1 family,	1	2	1	4
March 1, 1881, ...	8 families,	31	14	12	57
June 1, 1881, ...	102 "	357	119	178	654
February 1, 1882, ...	321 households,	1,168	445	471	2,084
March 8, 1883, ...	705 "	1,956	984	1,572	4,512
August 15, 1883, ...	910 "	2,878	1,039	1,906	5,823
November 20, 1883, . . .	1048 "	3,128	1,388	2,169	6,685
September 4, 1884, . . .	1295 "	3,817	1,773	2,613	8,203
September 30, 1884, . . .	1361 "	3,945	1,845	2,723	8,513

Of the population on September 30, 1884, 4,205 were born in the United States, 527 in the Canadas, 425 in England, 596 in Ireland, 170 in Scotland, 85 in France, 953 in Germany, 297 in Norway, 851 in Sweden, 212 in Denmark, 55 in Italy, 137 in other countries, such as Holland, Greece, and in Asia and Africa.

Omitting fractions, the religious preferences of the population may be expressed as follows:

Presbyterian, ...	8	per cent.
Congregational, ...	2	"
Baptist, ...	4	"
Methodist, ...	8	"
Lutheran, ...	24	"
Episcopalian, ...	11	"
Catholic, ...	27	"
Dutch Reformed, ...	2	"
Universalist, ...	1	"
Swedenborgian, ...	1	"

The remaining 12 per cent. of the population includes those of other beliefs, but who expressed no religious preferences.

There are 75 pianos in the city, and the private libraries contain 30,000 volumes, while newspapers and magazines are freely taken in Pullman.

Of the 3,945 men here only about 900 are registered as voters, (October 29, 1884,) and this is probably three fourths of the voters residing in this city.

Nearly all the men accounted for on the population statistics are employed in the works of the company. Of course there are a few tradesmen and others. The total number employed in the works is about 4,000, but this includes some who live in surrounding villages or who come down from Chicago.

Wages, Rents, and Living Expenses.

The wages paid in the works at Pullman are somewhat higher than those paid for like work in other places. They have been adjusted on the hour basis, and from such basis piece wages have been arranged. The attempt

to justly equalize and adjust wages has sometimes caused complaint amongst the workmen, and in one instance a strike of small moment. The strike took place among the freight car builders who formerly received $18 for the construction of a car. Through a readjustment of the forces necessary to the preparation of the material of which the car was built, the price per car was reduced to $12, four men being able to build a car in eight hours, the result being the wage of $3 per man for eight hours' work. Under this arrangement there was no cessation, no breaks in time; in the old arrangement, when $18 per car was paid, the men made long waits for material and did not earn any more, and often not as much, as at the present price per car, and with steady employment. But the first effect of the re-arrangement of the forces and consequent readjustment of prices was a strike of short duration. With this exception, no strikes have occurred at Pullman city, and so far as we could learn there was no complaint regarding wages paid.

In the early days of the city, more men naturally were borne on the rolls than were actually necessary. In bringing the force employed to an economic basis, under which one man should be paid for one man's work, and only one employed where only one was necessary, discharges or transfers took place, and this caused some complaint, but as the motto of Pullman is "Work for all, and all to work" that sentiment soon found lodgment and complaint ceased.

It costs quite as much to live in Pullman as in any other locality with which it can be reasonably compared. A two-room tenement in a second story flat, but having all the conveniences of water and gas, and for sewage and garbage, rents for $4 per month, and a three-room tenement similarly situated for $4 50 per month. Two-room flats in small houses, large enough to accommodate five families, rent all the way from $5 to $8 50 per month, while two, three, and four-room tenements in large blocks rent from $6 50 to $10 per month. Four-room tenements on the first, second, and third floors of three-story flats, rent for from $11 to $13 50 per month, while four and five-room tenements in two-story flats may be had for $14 and $15 per month. Single five-room cottages rent for from $16 to $19 per month, while single houses of from six to nine rooms vary from $22 to $100 per month.

The average monthly rental per room in the whole city of one thousand five hundred and twenty houses, having six thousand four hundred and eighty-five rooms, is $3 30. In the manufacturing towns of Massachusetts, the average rental per room is $2 86 per month.

The rentals at Pullman are a little higher for the same number of rooms than in Chicago, but in Chicago the tenement would be in a narrow street or alley, while in Pullman it is on a broad avenue where no garbage is allowed to collect, where all houses have a back street entrance, where the sewage arrives at a farm in three hours' time from its being deposited, and where beauty, order, and cleanliness prevail, and fresh air abounds.

ARCADE. STABLES. CASINO. SCHOOL-HOUSE.

There are no taxes to be paid other than personal, and when all the advantages which a tenant has at Pullman are taken into consideration as compared with his disadvantages in other places, the rent-rates are in reality much lower.

The tenant is under no restrictions beyond those ordinarily contained in a lease, except that he must leave his tenement at ten days' notice, or he can give the same notice and quit. This short limitation has been established in order that no liquor saloons, objectionable houses, or anything likely to disturb the *morale* of the place, can become fastened on the community.

All the houses in Pullman city are owned by the company. This policy has been considered the best in the early years of the city in order that a foundation may be securely laid for a community of good habits and good order.

The men are employed without restriction. There are no conditions laid upon their freedom; they are paid fortnightly, and they expend their wages when and where they see fit, their rent being charged against their wages. This, at first, caused some complaint, but the system is now generally liked, for when wages are paid there is no bother about rent bills, and the wife and the children know that the home is secure. Repairs, if due to the carelessness or negligence of the tenant, are made by the company at the lowest possible expense, and charged against the tenant. Of course, the company, like all landlords, expects to keep the houses in tenantable condition.

There has been some friction in this matter, but as the policy of the company becomes more generally and better understood, the complaint ceases.

Schools, Churches, Amusements, etc.

The company has erected a very fine school-building having fourteen commodious rooms, which now contain about nine hundred pupils. The schools are under the charge of the school authorities of Hyde Park. They are in a prosperous condition and well accommodate the school population.

There are two or three religious societies, and the beautiful church which has been built by the company, while occupied by any sect or by anybody that wishes to hold meetings there, is awaiting the occupancy of some society that chooses to lease it at a fair rental.

In the arcade is to be found a library handsomely fitted and well stocked with books.

The company have also provided a gymnasium, an amphitheater for games, base-ball grounds, and in the arcade is one of the most æsthetic theaters in the country.

All these influences are gradually elevating the society of Pullman city, and their influence is largely felt.

There is but little crime or drunkenness in Pullman, and one policeman,

an officer appointed by the authorities of Hyde Park, constitutes the police force for eight thousand five hundred people. In two years but fifteen arrests have been made; there is no general beer-drinking, for there are no liquor-saloons in the town. The hotel provides its guests with liquors, but under orderly restrictions.

There is no pauperism; two or three families, where the head has been taken away, or where some accident or misfortune had rendered it necessary, have been aided; but pauperism, as such, does not exist at Pullman.

Health, Accidents, etc.

In a paper entitled "Pullman from a State Medicine Point of View," by Oscar C. De Wolf, M. D., commissioner of health, Chicago, read before the American Public Health Association at Detroit, at the session of November, 1883, we find the following significant statements:

"The town has now seven thousand five hundred inhabitants, and its average annual population has been five thousand. During the two years of its existence, sixty-nine persons died, its death-rate being, therefore, 6.9 per 1,000. The death-rate of the rest of Hyde Park (a village of which Pullman is legally a part, and which includes much rural territory) is 15 per 1,000. The causes of death were—

Zymotic diseases,	23
Constitutional diseases,	3
Local diseases,	22
Developmental diseases,	3
Violence,	17
Unknown,	1
	69

"The large percentage of deaths by violence is due to the fact that Pullman is the center of numerous railroads, and to the casualties attendant on its manufactures. The deaths under five years of age were thirty. Of these there died from zymotic diseases twelve, of which there died from

Cholera infantum,	6
Diphtheria,	3
Scarlatina,	2
(Toy pistol,) Septicæmia,	1
	12

"This favorable showing speaks for itself."

Dr. De Wolf's statement had reference to the two earlier years of the existence of Pullman. The last year presents as good a record.

From November 1, 1883, to November 1, 1884, there were 53 deaths in Pullman. Hence there was an average of 7.599 deaths per year for every 1,000 of population. For three years Pullman has had this low death-rate. The average for American cities is over three times this number, and the

PRESBYTERIAN CHURCH.

average annual death-rate of the world is 32 out of every 1,000 of population. The average death-rate in the city of Mexico is 56 per thousand or eight times the rate in Pullman. Of these 53 deaths, 2 were of persons over 50 years of age, 2 of persons between 40 and 50, 2 of persons between 30 and 40, 4 of persons between 20 and 30, 4 of persons between 10 and 20, none of persons between 5 and 10. Eleven were of children over 1 and under 5, while 28, or more than one half the deaths, were of children under one year of age. The heathful conditions here are unequaled by those in any city of the world. The lowness of the death-rate is remarkable. With one quarter of the physicians that ordinarily administer to a population of this size, Pullman has only a little more than one quarter of the deaths usual in the same number of people.

The company has adopted a very broad and liberal policy relative to compensation for accidents received during or by means of work in the shops. At present it is contemplated to secure the insurance of all the employés of the company against accidents by the men taking out policies in worthy companies, from which insurance, in case of disability, they would receive one dollar per day, Pullman's Palace Car Company guaranteeing to pay an additional one dollar per day. This arrangement is perfectly just, and must result in putting the men on the best possible basis as regards compensation for accidents. It is generous on the part of the company employing them, because it is not by law liable for damages in case of accident.

Moral Influence.

Dr. De Wolf, in the report already cited, in speaking of the influence of Pullman city on its inhabitants, says:

"The change in population from emigration amounts to one per cent. per annum. These emigrants go forth educated in a way that entitles them to be called sanitary missionaries. There are no special requirements to induce change in the habits of people taking up residence in Pullman, but it is a matter of common observation that unsanitary habits—such as making yard cesspools, etc.—soon vanish under the silent but powerful influence of public opinion as shown in the habits of neighbors. Families with dirty, broken furniture soon find it convenient to obtain furniture more in accord with their surroundings. Men who are accustomed to lounge on their front stoops, smoking pipes, and in dirty shirt-sleeves, soon dress and act more in accordance with the requirements of society. All this is accomplished by the silent educational influence of their surroundings. There are no saloons in the town, and one great element of debasement is thus avoided."

Dr. De Wolf has spoken the truth, and another year's experience at Pullman has intensified the force of all he has said.

When Pullman city was first founded, many families came there who had been in the habit of living in a filthy, shiftless way. They came from tenements that were not neat, and that had no pleasant surroundings.

Their presence in the new city was like a rubbish heap in a garden—out of place, and unseemly. One may contemplate the feelings of Mr. Pullman on witnessing these evidences of unappreciation of all the beauty he brought into existence, and it would have been natural for him and for his coadjutors to have indulged in some fault-finding.

On the other hand, the untidy families were left to themselves. As they walked about the streets of Pullman city and witnessed everywhere orderly ways, well-kept lawns, tidy dwellings, clean workshops, and could turn nowhere without meeting order, they naturally began to make comparisons, and such comparisons have resulted in setting their own houses to rights. This is the influence of order and cleanliness everywhere. So the moral influence of Pullman city is an ever-present lesson to every family that takes up its abode there. This perfect order, and the cleanliness which comes of it, is often felt as a restraint upon those who have been brought up under disorder and in uncleanliness, and sometimes causes a sigh for the looser ways and the consequent looser morals of other communities. Such people do not find the air of Pullman city congenial, and no obstacle is thrown in their way should they desire to leave.

These considerations make it easy to see how the company secures the best mechanics.

General Considerations.

We have given the history and the facts relating to Pullman city. There is a deeper side which requires a closer study.

The principle on which Pullman city is founded, and on which its success largely depends, is that, in all industrial enterprises, business should be so conducted and arranged as to be profitable to each of the great forces, capital and labor.

Mr. Pullman does not believe that a great manufacturing concern can meet with the highest economic and moral success where the profit is unduly large to capital, with no corresponding benefit to labor. The mutual benefit which comes from well-adjusted forces is, to his mind, what brings the best success.

On the other hand, he has made no claim to being a philanthropist; the sentiment prevails in his city that true philanthropy is based on business principles and should net a fair return for efforts made.

Promiscuous charity has no place in the establishment of Pullman. Personally, the president of the company makes the favorable conditions, and, having made them, he then concerns himself chiefly in supplying his people with steady employment. The art interests, the moral interests, the social and human interests, with favorable conditions supplied, take most excellent care of themselves. Incidentally, his competent staff have an eye to all interests.

Mr. Pullman is no dreamer; he has studied the plans of socialists and reformers, and the schemes of philosophers, for the benefit of humanity.

Beginning at the bottom rung of the ladder, and, therefore, familiar with

HOTEL FLORENCE FROM LAKE VISTA.

the wants and aspirations of the workers of society, he has risen, by the force of his own character and genius, to his present position; he does not care to leave the world and look back upon his action and see that he has only offered a glass of water to the sufferer by the wayside, but he wishes to feel that he has furnished a desert with wells of living water that all may come and drink through all time. So he commenced with the foundation idea of furnishing his workmen with model homes, and supplying them with abundant work with good wages, feeling that simply better conditions would make better men and his city become a permanent benefaction.

He saw great amounts of money being used in speculative schemes, in stock operations, and in all the questionable ways which men take to increase their capital. He saw the energy, the enthusiasm, and the ability which entered into such operations. He could see no reason why all these elements could not be diverted into channels whereby the public should be the gainer and not the loser by great money operations. If capital could be invested in great industrial schemes like Pullman instead of in stock operations, but in such a way as to net a handsome profit to capital and thereby attract it, then not only would capital be safely, securely, and profitably invested, but it would bring even returns without the feverishness of the other method, and the great benefits which would come to the workingman, and thus directly to society itself, would be a positive and absolute gain.

Mr. Pullman's plans did not stop with the founding of an industrial city, but they contemplated establishing alongside great mechanical works where all the science of mechanics is practically applied in every-day labor, technical schools where the young might learn the theory and see the application of great mechanical powers. There could not be a better location in the whole country for the highest development of mechanical skill. With technical schools successfully established, Mr. Pullman saw far enough in the future to contemplate a great university.

The great advantages of the geographical location of Pullman city warranted his vast plan; being the center of the United States commercially, and not far from the center geographically, he saw no reason why, with scientific works established and with well-equipped technical schools, Pullman city should not only teach the nation the way to build up a magnificent class of workmen, living under happy and moral conditions, but furnish the country with the most skillful foremen and leading mechanics. To accomplish successfully what Mr. Pullman has undertaken, is to carry the world, so far as such men can reach it, to a higher level in civilization.

To do this it was necessary for him to open new avenues for the investment of capital, investments, which, as we have said, not only return ample interest in the form of money dividends, but make a grander return in the form of happy homes and happy hearts. Men must grapple with such enterprises in the belief that the life of the laborer should be some-

thing more than a weary round of hard toil; and in the belief that in aiding him to help himself and become a better man, a better brother, a better father, and a better citizen, they are rendering him the best possible service, and in the belief that individual charity, that is, merely giving a man something, often does more harm than good.

The general management of Pullman, of course, partakes of the sentiment of its founder, a broad, comprehensive humanitarian. As we have said, without restrictions upon labor, but, so far as we could see, always with justice; for instance, discharges are made with a view to being just. If one of two men must be discharged, other things being equal, the single man must leave and allow the married man to remain; or, if one of two men must be discharged, and each has a family, and one resides away from Pullman and the other at Pullman, the resident is to be preferred.

All such matters give rise to complaints through superficial consideration, but the even-handed justice which prevails is shown by an examination of all sides of the question.

After very careful investigation and the study of Pullman city from the standpoint of the manager, and that of the laborer, the mechanic, the physician, the priest, and from all points of view that we could muster, the question naturally arose, as it might arise in all men's minds who examine such institutions, what are the weak points in the plan? Superficially, we could see at once that the workman had no status as an owner of his home, but we could see that, in the early years of Pullman city, if he had such a status it might be the means of his ruin, financially. The company owns everything, manages everything; the employés are tenants of the company. This feature will be for some time longer the chief strength of the place, but in this strength lies its weakness. This feature is its strength so long as the industries of Pullman city belong to one great branch, the manufacture of one thing, or the things auxiliary to that manufacture. Now, should the industry of car-building collapse or stagnate to any degree, the tenant employé is at liberty to remove at once; he has to give but ten days' notice to vacate his tenancy. He is free to take up his abode where he chooses, without the fear or the fact of any real property going down on his hands. But Mr. Pullman and his company have contemplated this very state of affairs, and are doing all in their power to bring in a diversity of manufactures so that if one kind of goods are not produced another will be. The industrial operations of the place, through Mr. Pullman's exertions, are being extended to the erection of houses, public works, and public buildings. The manufacture of brick, the capacity of all the works to turn out finish, and all the wood materials of buildings, and the other features mentioned under "industries" have given the place a diversity of employment and of industry which is leading it into strong and permanent industrial conditions. The result of these conditions, should the railroads of the country operate their own palace cars, will preserve the industrial integrity of Pullman city. With these advantages, or, when these advantages come, the

INTERIOR OF LIBRARY.

tenant employé at Pullman may become the owner of his home. For this purpose, a large tract of land has been set aside. and, when the time comes, will be sold in small lots to the workman, his house built at cost, and he allowed to pay for it on easy terms. Then, what would now be a weakness at Pullman will become its strength, and the plan of the city, which has been projected on the basis of a population of one hundred thousand, will meet its great success, and these two weak points, the lack of diversified industry and the lack of home ownership, will no longer exist.

To enable this feature of the purchase of homes to be carried out, a savings bank has been established having now deposits to the amount of about one hundred thousand dollars. This money is held subject to immediate call whenever the plans are perfected for the purchase of homes, and will be used in loans to the workingman. It is invested on call, so as to be perfectly available whenever wanted. These deposits are entirely the savings of the workingmen of Pullman, and made during the period in which the bank has existed.

The Pullman establishment must, we think, impress the most casual observer as rare enough to be remarkable and good enough to be commendable. Even, superficially, it presents a novelty and attractiveness which, in themselves, command approbation, but the closer scrutiny which we were permitted to give it developed the fact that its excellence was by no means superficial, that it is not only as good as it looks, but better, and that every promise has been made more than good.

Physically, it is better for the reason that its underground system is as complete and costly as the improvements upon the surface, so that there is not only a justification for the fair exterior, but a guarantee of its permanence, and of the welfare of the workers and dwellers in the town.

We found the *morale* of the place even better than we expected. Merely external appearances may not clearly indicate social conditions nor the motives and the policy of the management in such an establishment, yet, if the commissioners did not find that the whole plan was conceived and executed in a spirit of broad and unostentatious philanthropy, our observations and conclusions were at fault throughout. We must regard our investigation as having generously confirmed the good impressions of all those who are predisposed in favor of the Pullman enterprise, and it must disarm those who may have felt some degree of prejudice against it.

In order to arrive at any just estimate of the credit due the projectors of the industrial community under investigation, we were in duty bound to recognize the fact that the company merely proposed to manufacture railway cars for profit; no obligation rested upon them to enter upon any scheme of general beneficence, or to jeopardize their financial interests by a costly experiment in the interests of their employés. For the initial disposition in this latter direction, however, they, and all men like them, deserve praise and encouragement. Having determined that such an experiment might justify itself in a commercial sense as well as on humanitarian

grounds, it was still in their option to provide merely comfortable tenements for their men, plain structures for shops, and ordinary facilities for cleanliness and sanitation, and for these even they would have deserved well, and yet they go much broader and deeper, and decide upon the most perfect methods of drainage for which their site afforded no facilities, and for a system of gas and water distribution to every house and apartment. They construct permanent streets and an elaborate system of drainage. Not content with plain buildings, they exhaust the architect's skill in designing the greatest variety of forms for dwellings suited in size and appurtenance to all grades of employés; they erect costly and beautiful buildings for public uses, the church, library, and market-house, public halls, theater, savings bank, and stores; they furnish a park for field sports, amphitheater for games, and every facility for recreation, physical and mental; and the place is neatly and attractively ornamented with lawns, shade-trees, artificial lakes, fountains, and flowers. In brief, they stop at nothing short of a model establishment constructed upon plans which are the result of the widest experience and the best observation for which modern life affords opportunities.

While all this is done at a considerable outlay of money, which, to the ordinary manufacturer, might seem reckless, and commercially, at least, unjustifiable, the conviction grew upon us, as the details of this magnificent work became understood, that although no such motive has ever been proclaimed, there was really a noble and broad inspiration in the original conception of the undertaking beyond that of merely making the greatest possible amount of money, beyond that of mere personal glorification; an inspiration looking to an actual elevation of the standard of life among the working people who might be fortunate enough to be identified with it. Nothing could be more laudable, from our point of view, than this, and the Pullman company deserves well of their employés and of all men, not only for what they have accomplished for themselves and their own, but for the conspicuous example they have given the world of the nobler uses of great wealth. It is our view of the case, moreover, that even if they had attempted and accomplished much less, or even had made great mistakes, they would still deserve commendation for their manifest disposition to recognize the welfare of their employés as of the first concern to themselves. To the growth of such a sentiment among employers, and the practice of it in whatever degree circumstances may permit in smaller establishments, must we look for the real alleviation of the burdens which labor imposes upon those who live by it.

As to the question of earnings in the various grades of employment, and the cost of living within as compared with that outside the community, we are not, as we have already indicated, disposed to insist that the one be greater, and the other less, than elsewhere in order to demonstrate the advantages of the place. We should rather say that were there to be an actual money balance, or not, at the end of the year in favor of the average work-

HOTEL FLORENCE.

man at Pullman, there must be a balance in his favor in all those things which go to make up comfortable and healthful living, in opportunities for the education of children, and their protection from dangerous influences; in the incentive to self-respect and self-culture, and in all the social, moral, and sanitary influences which surround the life of every one at Pullman.

If the workman at Pullman lives in a "gilded cage," we must congratulate him on its being so handsomely gilded; the average workman does not have his cage gilded. That there is any cage or imprisonment about it is not true, save in the sense that all men are circumscribed by the conditions with which they surround themselves, and imprisoned by the daily duties of life.

It is quite possible that the Pullman community has been organized and developed thus far on a plan as comprehensive as commercial prudence permits, but when the experiment as now outlined shall have become an established success, it would be gratifying to see certain additional features considered, and if feasible introduced for practical test.

To make Pullman the ideal establishment of the theorists, in addition to the option of purchasing homes and the strength which must come from diversified industry, one would naturally expect that when this enterprise shall have survived adversity as well as prosperity, and the wise and beneficent policy now being tested shall have borne its fruit in a permanent community of intelligent and prosperous workingmen, it may then be found possible to advance them to a share of the profits of the business itself. However this may be, we think we are justified in the belief that, as long as the present management or the spirit of the present management exists, the beneficent features of this most progressive industrial establishment will be extended as rapidly as circumstances may ripen for them.

Let the model manufactory and the industrial community of Pullman city be commended as they deserve for whatever they are or what they promise to be. Let them be held up to the manufacturers and employers of men throughout the country as worthy of their emulation. Let Mr. Pullman and his coadjutors be assured of the good wishes of all those who seek the advancement of their kind.

CARROLL D. WRIGHT,
Chief, Massachusetts Bureau of Statistics of Labor.
JOEL B. MCCAMANT,
Chief, Pennsylvania Bureau of Industrial Statistics.
HENRY LUSKEY,
Commissioner, Ohio Bureau of Labor Statistics.
JAMES BISHOP,
Chief, New Jersey Bureau of Statistics of Labor and Industries.
H. A. NEWMAN,
Commissioner, Missouri Bureau of Labor Statistics and Inspection.
JOHN S. LORD,
Secretary, Illinois Bureau of Labor Statistics.

WM. A. PEELLE, JR.,
Chief, Indiana Bureau of Statistics and Geology.
CHARLES F. PECK,
Commissioner, New York Bureau of Labor Statistics.
JOHN S. ENOS,
Commissioner, California Bureau of Labor Statistics.
JOHN DEVLIN,
Deputy Commissioner, Michigan Bureau of Labor and Industrial Statistics.
FRANK A. FLOWER,
Commissioner, Wisconsin Bureau of Labor Statistics.
E. R. HUTCHINS,
Commissioner, Iowa Bureau of Labor Statistics.
THOMAS C. WEEKS,
Chief, Maryland Bureau of Statistics of Labor.

H. A. NEWMAN,
President of Convention.

HENRY LUSKEY,
Secretary.

THE ARCADE FROM NORTHWEST

REPORTS

OF THE

MINE INSPECTORS

OF THE

BITUMINOUS COAL FIELDS.

BITUMINOUS COAL DISTRICTS.

The following are the counties, or parts thereof, comprising the respective mining districts of the bituminous coal fields of the State, arranged in accordance with the law by the board of examiners.

The following are the names of the board of examiners: William A. Edeburn, J. Sutton Wall, John Ditchman, John Mitchell, and John Hellwig.

The boundaries of the several districts, with the names and addresses of the mine inspectors, are as follows:

FIRST DISTRICT.

THAT PART OF ALLEGHENY AND BEAVER COUNTIES LYING SOUTH AND WEST OF THE OHIO, MONONGAHELA, AND YOUGHIOGHENY RIVERS, AND THAT PART OF WESTMORELAND LYING BETWEEN THE MONONGAHELA AND YOUGHIOGHENY RIVERS, AND THE COUNTIES OF GREENE AND WASHINGTON.

JAMES LOUTTIT, Inspector,
Monongahela City, Washington county.

SECOND DISTRICT.

THAT PART OF THE COUNTY OF ALLEGHENY LYING EAST OF THE ALLEGHENY, MONONGAHELA, AND YOUGHIOGHENY RIVERS, AND ALL THAT PART OF THE COUNTY OF WESTMORELAND LYING EAST OF THE YOUGHIOGHENY RIVER.

JOHN J. DAVIS, Inspector,
662 Fifth avenue, Pittsburgh.

THIRD DISTRICT.

THAT PART OF BEAVER COUNTY LYING NORTH OF THE OHIO RIVER, AND THE COUNTIES OF BUTLER, CAMERON, CLARION, CRAWFORD, ELK, ERIE, FOREST, JEFFERSON, LAWRENCE, MCKEAN, MERCER, VENANGO, AND WARREN.

THOMAS K. ADAMS, Inspector,
Wheeler P. O., Mercer county.

FOURTH DISTRICT.

THE COUNTIES OF BLAIR, BRADFORD, CENTRE, CLINTON, HUNTINGDON, LYCOMING, SULLIVAN, POTTER, AND TIOGA.

ROGER HAMPSON, Inspector,
Towanda, Bradford county.

FIFTH DISTRICT.

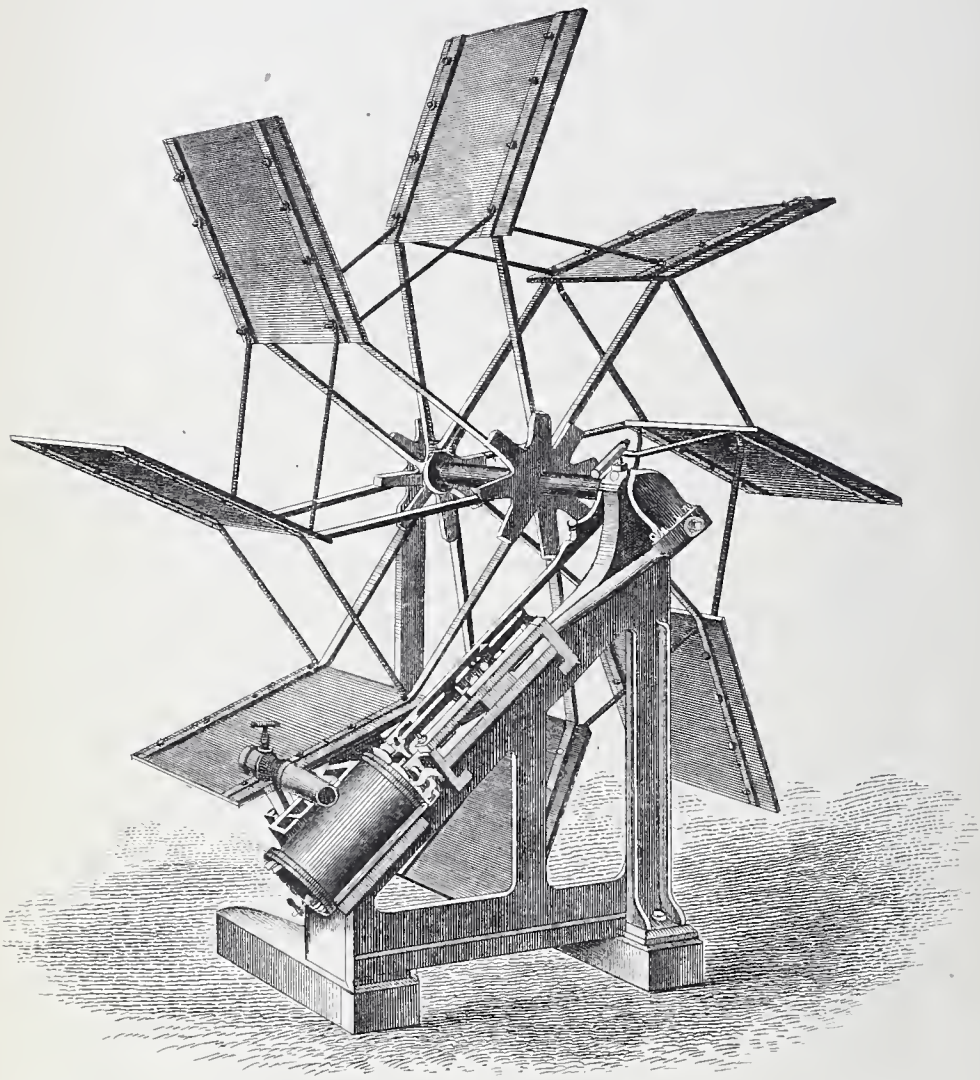
THE COUNTIES OF BEDFORD, FAYETTE, AND SOMERSET.

AUGUSTUS STINNER, Inspector,
Connellsville, Fayette county.

SIXTH DISTRICT.

THAT PART OF ALLEGHENY COUNTY LYING NORTH OF THE OHIO AND ALLEGHENY RIVERS, AND THE COUNTIES OF ARMSTRONG, CAMBRIA, CLEARFIELD, AND INDIANA.

JOHN M. WATT, Inspector,
Tarentum, Allegheny county.



STEAM FAN FOR VENTILATING MINES.

LETTER OF TRANSMITTAL.

FIRST DISTRICT.

To the Hon. J. SIMPSON AFRICA, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

SIR: I herewith submit my annual report as inspector of mines for the First bituminous coal district of Pennsylvania, for the year ending October 31, 1884.

The district comprises that part of the counties of Allegheny and Beaver lying south and west of the Ohio, Monongahela, and Youghiogheny rivers, and that part of the county of Westmoreland lying between the Monongahela and Youghiogheny rivers, and the whole of the counties of Washington and Greene. It contains 129 mines, which come under the law when in operation. Of this number, 20 have remained idle throughout the entire year, and a large number of the others have been inactive for a considerable portion of the time, owing in some cases to dullness of the trade. The river mines have suffered a loss of much time by reason of a protracted strike of the miners in the several pools during the months of July, August, September, October, and November. This resulted in a large falling off of the production from that of last year, amounting to nearly two and three quarter million tons. Operations have, however, been generally resumed again along the river, with fair prospects for continuing for some time.

The general condition of the mines throughout the district is found to be steadily improving. Fans and furnaces are being largely introduced, and very few mines now remain without good facilities for proper ventilation.

Machinery is being used largely in the place of mule power for transporting coal from the mines. This is said to reduce the cost of production considerably and increase the ability for handling larger quantities of coal.

The number of fatal accidents has been 19, and the number of non-fatal has been 37. Of the fatal accidents, 11 were caused by falls of over-clay; and of the non-fatal, 37 were caused by falls of over-clay, amounting to 62 per cent. of the whole. 11 fatal accidents were caused by falls of coal, and 2 non-fatal by the same cause, amounting to 9 per cent. of the whole. Of the fatal accidents, 3 were caused by cars and machinery; and of the non-fatal, 6 were produced by the same cause, amounting to 16 per cent. of the whole.

One explosion of fire-damp killed 2 men, and 4 others were injured by explosions of the same gas, amounting to 11 per cent. One man was injured by an explosion of powder.

FATAL ACCIDENTS.

Fall of over-clay,	11
Fall of coal,	3
Cars and machinery,	3
Explosions of gas,	2

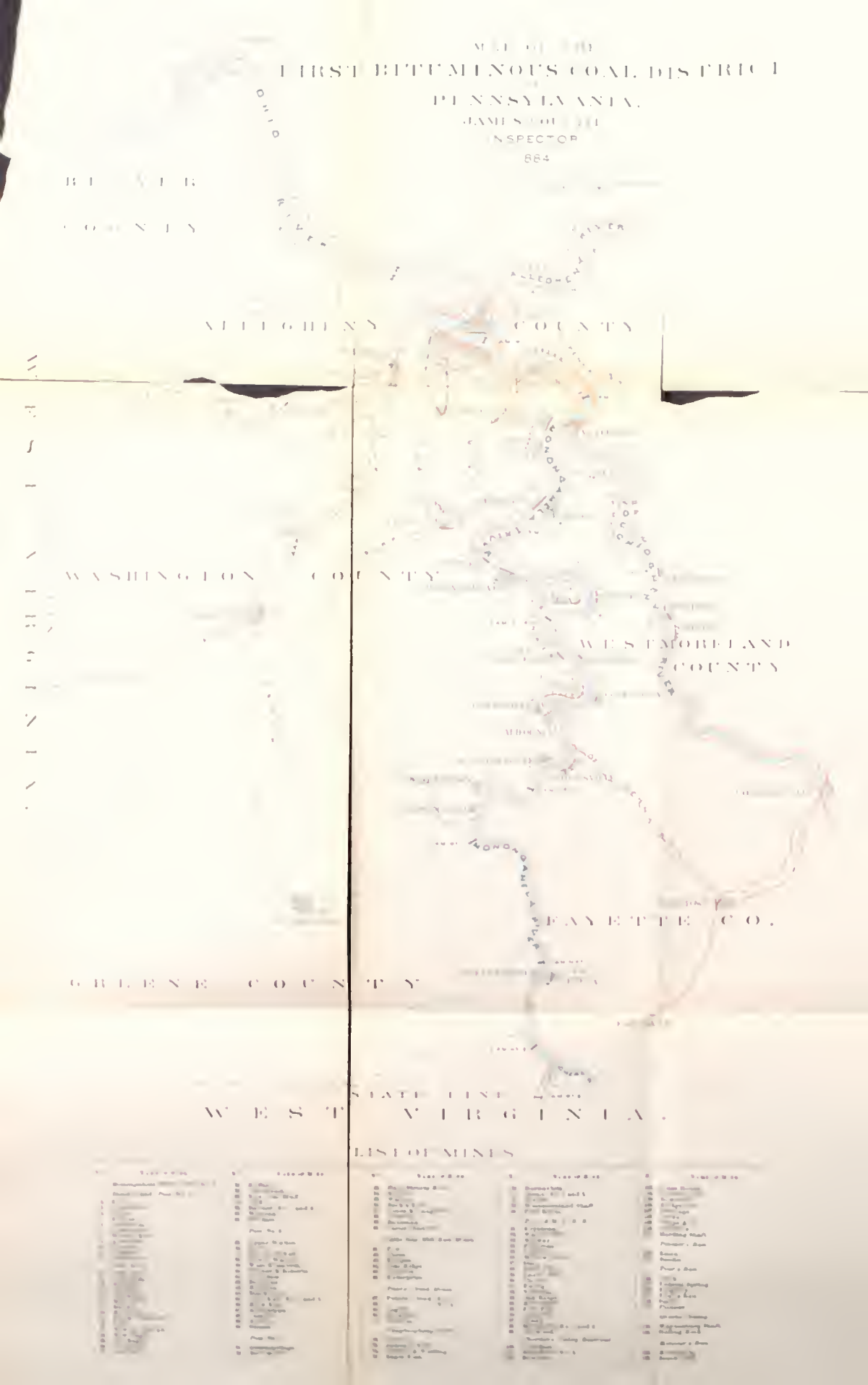
NON-FATAL ACCIDENTS.

Fall of over-clay,	24
Fall of coal,	2
Cars and machinery,	6
Explosions of gas,	4
Explosion of powder,	1

Actual production of 105 mines, as reported, in tons,	4,349,165
Number of miners employed,	11,016
Number of day men employed,	1,312
Number of mules in use,	779
Number of lives lost in and about the mines,	19
Number of non-fatal accidents,	37
Number of widows caused by the above-named accidents,	10
Number of orphans caused by the same accidents,	20
Number of tons of coal produced to each fatal accident,	$228,903\frac{8}{19}$

In my last annual report, I called attention to the importance of establishing a hospital for injured miners at some point within the bituminous region. The need for such an institution is still becoming more evident, and I hope that the subject will receive the earnest attention of our Legislature at an early day.

The question of establishing a school on a plan somewhat similar to our State normal schools for the training and education of the officers and persons in charge of our mines, is, also, one of great importance in my judgment, and should be placed before the attention of our law-makers. Each officer, from superintendent down to fire-boss, should be thoroughly trained and educated in all matters pertaining to the working and management of coal mines, and no one should be allowed to hold a position, where the lives and health of the miners are concerned, without possessing a thorough knowledge of the principles of ventilation and the properties of the gases found in mines, and should possess a diploma or certificate to that effect from a mining school. My observations, covering a period of over forty years in close connection with coal mines, leads me to believe that many of the serious accidents can frequently be traced to ignorance or gross neglect on the part of the officers in charge. The discharge of a pit-boss or fire-


MAP OF THE
FIRST BITUMINOUS COAL DISTRICT
IN
PENNSYLVANIA.
JAMES CUNNINGHAM
INSPECTOR
1884
BEAVER
COUNTY
ALLEGHENY
COUNTY
WASHINGTON
COUNTY
WESTMORELAND
COUNTY
FAYETTE CO.
GREENE
COUNTY
STATE LINE
WEST VIRGINIA.
LIST OF MINES

boss after an accident has occurred does not always remedy the matter, and does not restore the lives and health of the persons who may have suffered. By having a more competent and careful class of men in charge of the mines, I think we would have a more rigid observance of the requirements of the laws now in force.

The inspectors should be relieved from the duties of testing scales and branding pit cars. This should be made the duty of a separate person or persons specially appointed for that purpose. The duties and labors devolving upon the inspectors, according to the ventilation act of 1877, requires all the time at their disposal while the districts remain at their present size. The testing of scales and measuring and branding of mine cars, I think, are matters entirely foreign to the spirit and intention of the mining law as it was originally projected, and should not have been coupled with it.

This report is accompanied by brief descriptions of the mines and the usual tables, a map of the district, giving names and location of all the mines in the district, together with other maps and diagrams.

Very respectfully, your obedient servant,

James Louttit,
Inspector.

Monongahela City, Pa., *December 5, 1884.*

MINES ON THE MONONGAHELA RIVER.

Pool No. 5.

Black Hawk mine.

This mine is owned by Elisha Crouch, and operated, under lease, by Charles Smith and others. It was opened in 1853, and operated for a number of years to supply a small local trade. From 10 to 16 miners are employed. The seam here measures 7 feet 3 inches from the under-clay to the over-clay. The over-clay is one foot in thickness. One foot of coal rests on the over-clay.

Pool No. 4.

Knob mine.

Owned by Christopher Bakewell, John H. Bakewell, S. H. Pearsall, John D. Bakewell, D. H. Pearsall, Archibald Smith, Thomas Hollowood, James Thornton, and James Rollison. The coal is reached by a slope 190 feet in length and 68 feet in perpendicular depth. It is hauled from the working places to the foot of the slope by mules, and thence up the slope by means of a stationary engine and wire-rope located at the top of the slope. This engine is also used to pump water from the boats. A steam-pump is located near the bottom of the air-shaft, and used to deliver the water flowing into the mine. The main entry and air-course are driven perpendicular

to the faces, parallel with 60 feet of coal remaining between them, and to a distance of 500 yards. It is worked on the block system, with butt entries driven 90 yards apart. The rooms are worked 24 feet wide, and the ribs are left 9 feet thick. The main breast member is the only portion of the seam mined out here amounting to 5 feet and 9 inches in thickness, the bearing-in, brick, and bottom members being left undisturbed. The average number of men employed inside is 70, and 7 outside. They operated through the winter and spring and but little work has been done since. The ventilation is good.

Greenfield mine.

This mine is located at the lower end of Greenfield, and is owned and operated by Jordon S. Neel. The coal belonging to it is nearly exhausted; only a few acres of stumps and pillars remain. About 40 miners are employed, and the output is from 3,000 to 4,000 bushels per day. Ventilation produced by furnace and shaft.

Globe mine.

Owned by Blythe, Musgrave & Co. This mine has been operated but little during the present year. The head of the working is about a half mile from the river front or outlet. It is ventilated by furnace power.

Eclipse mine

Is owned by J. H. Eakin, and operated under lease by Jordon S. Neel. The original coal of this mine was exhausted some years ago, and an adjoining tract of 125 acres was recently opened up by J. S. Neel, which is being run out through the old main entry. Ventilation is produced by furnace power. This mine is in good working condition in every respect. Employs 100 miners, 5 drivers, 4 trappers, and 9 day men. Output averages 10,000 bushels of lump coal per day.

Caledonia mine.

Owned by Samuel Thompson, and operated under lease by Thomas J. Woods & Co. Woods built a new tipple, ice breakers, and furnace herein 1882, and every part of the mine is in good working order. The *breast bearing-in brick* and *bottom* coal members are all mined out, amounting to $7\frac{1}{2}$ feet in thickness. The mine is operated on the double-entry system. Employs 100 miners, 6 drivers, 2 trappers, and 7 day men, and the daily output averages 9,000 bushels per day.

Champion mine.

Owned by Samuel Thompson, and operated under lease by L. W. Morgan and John Dixon. The coal of the front hill has been exhausted, and the workings are now well advanced in the second hill. The coal seam rises toward the north-west here. The mine is operated on the double-entry system, with 50 feet of solid coal remaining between the main entry

and air-course. Ventilated by furnace power. They employ 75 miners, 5 drivers, 1 trapper, and 6 day men, and the output averages 8,000 bushels of lump coal per day.

Woods Run mine.

Owned by Samuel Thompson, and operated under lease by W. H. Gregg. Operated on the double-entry system, with 60 feet of solid coal remaining between the main entry and air-course. They mine out both breast and bottom coal members. Ventilated by furnace power. The air current near inlet measures by anemometer 7,000 cubic feet per minute, and at the furnace 7,425 cubic feet per minute. Employs 65 miners, 4 drivers, 2 trappers, and 6 day men. Output averages 6,000 bushels per day.

American mine

Is owned and operated by F. H. Coursin. It is worked on the double-entry system. Ventilation produced by furnace power. Volume of air-current passing through furnace measured 7,500 cubic feet per minute. Employs 50 miners, 4 drivers, 1 trapper, and 4 day men; and the output averages 5,500 bushels of lump coal per day.

Clipper mine.

Owned and operated by the Clipper Coal Company, It is worked on the double-entry system, and the head of the present workings is 800 yards from the pit mouth. Ventilation is produced by furnace power. The furnace is arched and lined with fire-brick, 20 feet in length, $5\frac{1}{2}$ feet in width, and 5 feet 8 inches in height in the clear. The fire-bed is 4 feet in length. The stack connecting with the rear end of furnace is 60 feet in height, and constructed of stone and brick, 6 feet square in the clear. 30 miners, 4 drivers, and 4 day men are employed; and the output averages 4,500 bushels of lump coal per day.

Rostravor mine.

This mine has been standing idle until recently, when operations were commenced again on a small scale by Abraham Rupert. It is worked on the double-entry system. Ventilated by a furnace, connected with a circular shaft and stack 6 feet in diameter and 82 feet in height. Employs about 35 miners, 2 drivers, and 4 day men.

Pool No. 3.

Iron City mine.

Owned by Phillips & Mitenzwyre. It has been idle for the last year, owing to the tipple having been carried away by high water during last spring.

Columbia mine.

Owned by J. F. Jones. Operated on the block system. The head of the present workings is nine hundred yards from the pit mouth. Ventilated

by furnace power. The furnace is built with a double arch, with an opening between the arches to permit the passage of air, which is intended to utilize the heat absorbed by the inner arch, and thereby increase the volume of air current passing through the mine. The volume of air was found to measure by anemometer 14,025 cubic feet per minute with a moderate fire. The coal of this mine is much disturbed by swamps, which render good drainage quite difficult.

The water collecting in the main swamp is carried out at the rear of the mine by syphon pipe, which is also connected with smaller pipes running to it from the other swamps. The coal measures 6 feet 4 inches from the under-clay to the over-clay. Horsebacks are quite numerous. Employ 70 miners, 5 drivers, and 6 outside men, and the output averages 6,000 bushels of lump coal per day when running.

Webster mine.

Owned by John & William Guffey. It has not been in operation during the last year, but is now being put in condition for work at an early day.

Gilmore mine.

Owned by the heirs of Captain John Gilmore. Work was quite active here during the last spring, and but little has been done since then owing to the unfavorable stage of the water for loading and the dullness of trade.

Beckett Run mine,

Belonging to the Bank of Commerce of Pittsburgh, has not been in operation for the last two years.

Stockdale mine.

Has done but little work during the last year, owing to a deranged condition of the company's business affairs.

Milesville mine.

Owned and operated by Robert Jenkins. It is worked on the block or single-entry system. The coal of the eastern side of the mine has been exhausted, and a new tipple was recently built at the west side of the property, which makes connection with a new entry on that side, from which the remaining coal will be reached. Employs 100 miners, 6 drivers, 1 trapper, and 7 day men, and the output averages 9,000 bushels per day.

Rankin mine.

Owned by M. W. Rankin, and operated under lease by Henry Rebka. It has continued to run throughout a considerable portion of the year on a small scale. Operated at present on the single-entry system. 65 miners 3 drivers, and 3 day men are employed, and the daily output averages 4,000 bushels per day.

Robinson mine.

Owned by S. B. Hays; has not been in operation during the last year. The ventilation is produced by furnace power. The mine is in good condition. Thomas Hutchinson is manager.

Black Diamond mine.

Owned by the heirs of W. H. Brown. It has not been in operation for about two years. They built a new tipple and made other extensive improvements at this place during the present year, and operations have again been resumed. About 60 miners, 4 drivers, and 4 day men are employed. The ventilation is produced by furnace power. This mine is worked on the double-entry system, and the whole mine is in good working condition. Henry Louttit is superintendent.

Ivile mine.

Owned and operated by James Jones. This mine has continued to operate throughout a large portion of the year. An air-tight shaft was sunk here during last spring, which connects with entry No. 9. It is also used to pump water out from that part of the mine. This has improved the ventilation of the workings very much. 120 miners, 5 inside drivers, 2 trappers, and 6 day men are employed; and the output amounts to 9,000 bushels per day. The coal is hauled from this mine by means of a stationary engine and wire line.

New Catsburgh mine.

Owned and operated by Lewis Staib. It has only been in operation during a portion of the present year, owing to a *strike* of the miners. The workings are quite extensive and in good condition. The coal is hauled from the mine by means of a stationary engine and wire rope. They are able to handle a large amount of coal at this place. The single-entry or block system is employed here. They employ 170 miners, 8 inside drivers, and 6 day men, and the daily output averages 10,000 bushels of lump coal, when running.

New Eagle mine.

Owned by Hon. James H. Hopkins. It was operated under lease by Lindsay & McCutcheon until the first of last July. It then remained idle until the first of October, at which time it was leased by Campbell, McCahel & Co., who since then have been operating in a small way. 30 miners are employed.

Old Eagle mine.

Owned and operated by the heirs of William H. Brown. The miners at this place work under a contract, and the mine in consequence has been in operation for a large part of the year. The coal is transported from the mine by a compressed air locomotive, which has given good results so far.

The mine is quite extensive and they are able to handle large quantities of coal at small expense. Ventilation is produced by furnace power, and all parts of the workings appear to be in good working condition. 100 miners are employed. The double-entry system is used here.

Courtney mine.

Owned by John L. George & Co., and operated by John L. George and J. F. Kennedy. The coal is hauled from the mine by means of a stationary engine and wire rope. Ventilated by furnace power. This mine was found in good condition. The product of the mine is shipped by rail. They employ 55 miners and 8 day men. Produce 4,000 bushels per day.

Garfield mine.

Owned by John N. Holmes, and operated under lease by Jordon S. Neel.

They have only run coal here through a portion of the year. The main entry crosses a swamp 14 feet in depth, and some time was occupied in blasting down the roof and bringing the road up to grade. The mine was suspended at other times by reason of the miners' strike.

Ventilation is produced by furnace power, and the workings were found in good condition. All entries are driven double or in pairs, with 40 feet of solid coal remaining between them. They will soon be in shape to run a large amount of coal at this place.

Buffalo mine.

Owned and operated by J. J. Staitler & Co. The head of the workings is one mile from the outlet at the river front. During the present year, they built a new tipple and a stationary engine, which is used to transport the coal from the mine. The ventilation is produced by a Champion fan, and the workings were found to be in good condition. The product of this mine is run by rail. They employ 125 miners, 6 drivers, and 9 day men, and the output averages 10,000 bushels of lump coal per day.

Cincinnati mine.

Owned by Robert Arthurs and others, and operated under lease by Jordon S. Neel. This mine has been undergoing repairs during the present year, and an air shaft is being put down at the head of the workings, which will greatly improve the ventilation when completed. It will soon be in good shape for extensive operations.

Coal Bluff mine.

Owned and operated by the Monongahela and Peters Creek Coal Company, composed of Allen Kirkpatrick, W. K. Gillespie, Alexander Dempster, A. M. Scott, and Evan Beedle. They have made extensive improvements both inside and outside of the mine, consisting of a new road, a

railroad, and river tipple. Their shipments have been principally made by rail during the present year This mine is worked on the double-entry system, ventilated by furnace power, and all the workings are in good condition. The head of the present workings is one mile from the river front. They are arranging to transport the coal from the mine by mechanical power. Employ 125 miners, 16 boys, and 4 day men; and the output averages about 8,000 bushels per day of lump coal.

Evan Beedle is superintendent, and Elijah Dainty is mine boss.

Cliff mine.

Operated under lease by Harvey Hutchinson. It is worked on the double-entry system, and the head of the present workings is one mile from the river outlet. The coal is hauled from the mine by means of a stationary engine and wire line. Ventilation is produced by furnace power. The furnace has recently been rebuilt and made somewhat larger than the old one; it is 12½ feet in length, 7 feet 8 inches wide, and 6 feet 9 inches in the clear. The grate bars are placed 2½ feet from the floor, and the fire-bed is 8½ feet in length. The furnace rises one foot from front to back. The shaft is built even with the rear end of furnace, circular in form, 7½ feet in diameter, and 110 feet in height, cut through rock and shale. A wooden stack, 30 feet in height, is placed on top of the shaft. The air from the pit mouth passes through the workings to the furnace, a distance of 4,340 yards. By anemometer test, I found the quantity of air passing through the furnace to be 33,250 cubic feet per minute, and by using fresh air from the main entry at a point 1,760 yards from the pit mouth, the quantity then passing was found to be 43,750 cubic feet per minute; this shows a loss of about 25 per cent. due to friction in the greater distance traveled. They have both a river and railroad tipple at this place. Employs 125 miners, 5 drivers, and 12 day men, and the output averages 8,000 bushels of lump coal per day.

Banner mines Nos. 1 and 2

Are owned and operated by John M. Risher. They are both operated in the same tract of coal in connection. The coal from No. 1 mine is run to the river trade, and from No. 2 mine to the railroad trade. The mines are ventilated by furnace power, and all of the workings were found in good condition. They have not been operated very extensively during the last year owing to dullness of trade. Employs 150 miners, 8 drivers, and 8 day men, and the output averages 9,000 bushels per day when running.

Wenona mine.

Operated under lease by James Skillen & Bros. It is a very old mine and the coal is nearly exhausted. They employ 25 miners, 3 drivers, and 4 day men, and the output averages 2,000 bushels per day of lump coal.

Hilldale mine.

Owned by William Hodgson, and operated under lease by Linch, Robinson, Wilson & Co. It is operated on the single-entry or block system. The air enters the east side of the mine through a shaft opening, passes around the head of the workings until it reaches the furnace at the west side. The coal is run on an incline road from the pit mouth to the river, by means of a stationary engine and wire rope. Employs 130 miners, 5 drivers, and 7 day men, and the output averages 9,000 bushels of lump coal per day.

Pool No. 2.

Upper Walton mine.

Owned and operated by Hon. Joseph Walton. Worked on the single-entry or block system. The main entry and air-course are driven parallel to each other, with 40 feet of coal remaining between them. The pit cars are hauled by mule power from the present workings in the second hill to and through the old workings of the front hill to the check-house, a distance of one mile, and thence they pass down a short gravity plane to the base of the hill; and from the last-named point they are hauled by a locomotive engine to the tipple at the river, an additional distance of one mile. Butt entry No. 9 of this mine connects with the main butt entry of the lower mine. The ventilation was found to be quite good, notwithstanding the absence of any mechanical force, which is largely due to the favorable position of the outcrop line on both sides of the mine, enabling nearly all of the entries to reach that line before the air current becomes very impure. 240 miners, 17 drivers, and 14 day men are employed, and the output when running averages 17,000 bushels of lump coal per day.

Jones mine.

Owned by Mrs. Rachel Jones, and operated by George Jones & Co. The coal is hauled by mule power from the interior of the mine to the pit mouth, and over an outside road, 300 yards in length, to the check-house on the face of the hill, and from thence it passes down a gravity plane, 1,170 feet in length, to the base of the hill, whence it is hauled to the tipple, at the river, by horses, an additional distance of 500 yards. The last-named portion of the coal road crosses the Monongahela division of the Pennsylvania railroad at grade. The mine is ventilated by furnace power. They employ 110 miners, 7 drivers, 12 day men, and the average output is 10,000 bushels of lump coal per day when running.

Harvey O'Neil mine.

Operated by Harvey and James O'Neil. They commenced to open this mine and build the necessary improvements in 1883, but did not complete them until the early part of the present year. The loaded cars are run to the tipple, at the river, on a gravity plane 700 yards in length, and the

empty ones are returned to the pit mouth by means of a stationary engine and wire line. The driving of entries has comprised the principal work done in the mine so far. 17 miners, 3 day men, and 2 drivers are employed and the output averages 1,500 bushels of lump coal per day.

Lower Walton mine.

Located in West Elizabeth. Owned and operated by Hon. Joseph Walton. The cars are hauled from the working places by mules to the parting on the *dilly* entry, and thence to the pit mouth by stationary engine and wire line. From this point, they are hauled by locomotive power through an entry of the old workings to the pit mouth on the face of the river hill, a distance of one and a quarter miles, or a total distance of one and three quarter miles. From the check-house, the cars are run down a gravity plane to the base of the hill, an additional distance of 300 yards, and from thence to the tipple, at the river. The main entry, called No. 5, is driven S. 25° W., 8 feet in width, and connects with the workings of the *Upper Mine*. The butt entries are driven 7½ feet in width, and all extend to the outcrop, which provides fair, natural air-currents throughout the mine. They employ 250 miners, 12 drivers, and 35 day men; and the output averages 23,000 bushels of lump coal per day when running.

West Elizabeth mine.

Located at lower end of West Elizabeth. Owned and operated by J. N. and W. O'Neil. It has been operated but very little during the present year, owing to strikes of the miners. Operations were recently resumed.

Horner & Roberts mine.

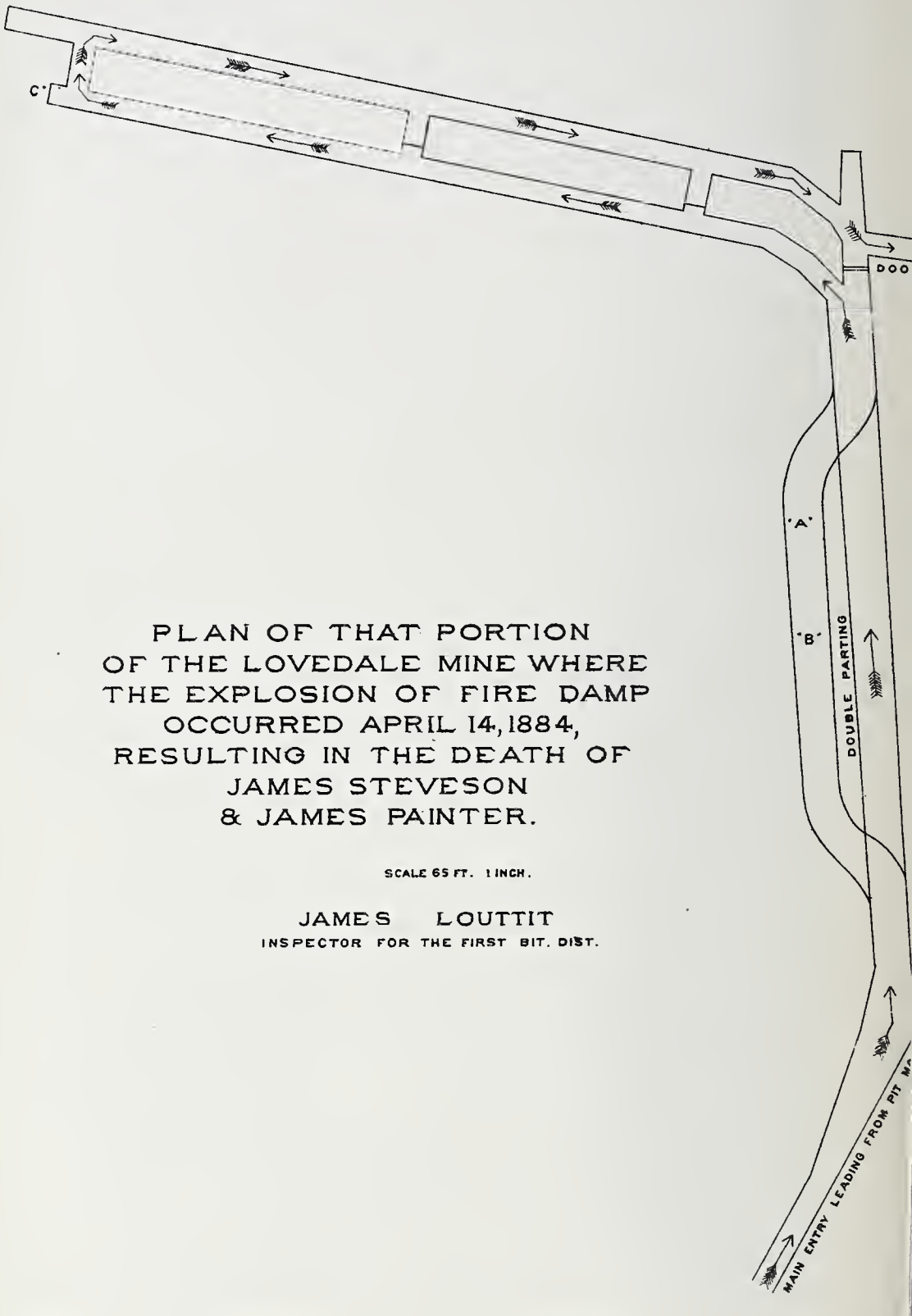
Located at Elizabeth, and owned and operated by Horner & Roberts. The coal is hauled from two main-branch entries in the mine to the pit mouth by means of a stationary engine and wire line a distance of 656 yards. The entries diverge from a point near the pit mouth, one bearing S. 25° W., and the other S. 51° W. The cars are hauled from the pit mouth to the tipple at the river by means of a steam locomotive engine, a distance of two miles, 40 cars being hauled at a trip. The locomotive road is laid with 40 and 50 pounds iron and steel rails, on ties of locust wood. The average grade of the road is 15 inches per 100 feet down from the pit mouth to the tipple. A new opening has been made into the northwest side of the property during the present summer, and a short gravity plane constructed to run the cars from the pit mouth down to the locomotive road. This mine is ventilated by furnace power, a new one having been built during the present year, a plan of which is made to accompany this report. The old furnace is still being used. These furnaces will be used to ventilate different parts of the mine independently of each other, which will secure a large amount of ventilating power to these workings, A swamp passes through the mine, producing a large amount of water.

which requires the use of five steam pumps to keep that portion of the mine free from water. The mine is in good condition in all respects. They employ 250 miners, 13 drivers, 3 trappers, and 5 day men, producing 14,000 bushels of lump coal per day. The improvements now in course of completion will soon enable them to almost double their present producing capacity. Samuel Roberts is superintendent, and Matthew Creevey is mine boss.

Lovedale mine.

Owned and operated by John A. Wood & Son. The main entry is driven S. 50° E. 2,100 feet, and from that point S. 35° E. 2,250 feet to its head. The general dip of the coal bed here is toward the south-east, except along the line of a swamp, which passes through the mine in a north-east direction. The mine is worked on both double and single-entry systems. The rooms are widened out in sets of ten rooms each alternately to the right and left, and every eleventh room is widened out both to the right and to the left. This plan enables the removal of the ribs when each block of ten rooms is worked out without endangering the rooms of the adjoining blocks. The coal is hauled from a point in the main entry at the bottom of the swamp to the pit mouth, a distance of 1,458 yards, by means of a stationary engine and wire rope. The cars are run by the acquired momentum from the pit mouth to the check-house, a distance of 100 yards further. Thence down a gravity plane to the foot of the hill, where they are formed into trains of twenty-two cars each, and transported by steam locomotive power to the tipple at the river, a further distance of about one mile. Ventilation is produced by exhaust steam from a pump which is used to remove water from the swamp. The steam escapes into the bottom of a shaft at that place. A furnace is located in the north part of the mine, which has not been in use for some time. It is also connected with a shaft. I examined this mine on the 7th of last April, and found it in good working condition in every respect. Observed a little gas escaping from the coal at the head of the two double-butt entries then being driven to the left of and near the head of the main entry, but not in quantities to cause danger with the velocity of air current which was then moving at that point. As a precaution against the possibility of the gas accumulating there in dangerous quantities, I directed another break-through to be made between the entries so as to keep the air current moving well up to the face of the workings. I afterwards learned that this break-through was made as ordered by me to be done.

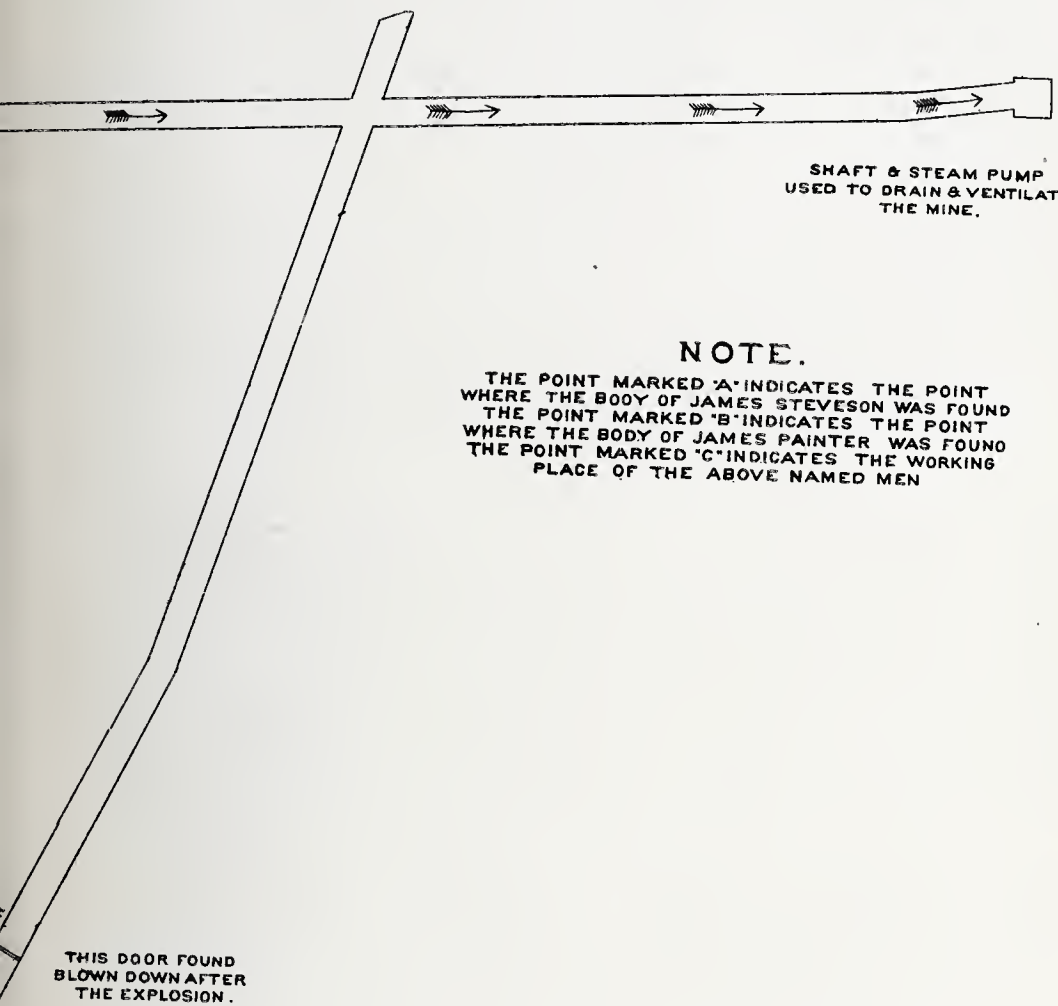
On the 14th of the same month, I was called back to this mine by reason of an explosion, which occurred about five o'clock of that morning in the main entry, near the mouth of the above-mentioned double-butt entries. This explosion caused the death of two of the men who had been working in these entries, James Painter and James Stevenson. A plan of this part of the mine, showing the entries, doors, &c., at time of explosion, is made



PLAN OF THAT PORTION OF THE LOVEDALE MINE WHERE THE EXPLOSION OF FIRE DAMP OCCURRED APRIL 14, 1884, RESULTING IN THE DEATH OF JAMES STEVESON & JAMES PAINTER.

SCALE 65 FT. 1 INCH.

JAMES LOUTTIT
INSPECTOR FOR THE FIRST BIT. DIST.



NOTE.

THE POINT MARKED 'A' INDICATES THE POINT
WHERE THE BODY OF JAMES STEVESON WAS FOUND
THE POINT MARKED 'B' INDICATES THE POINT
WHERE THE BODY OF JAMES PAINTER WAS FOUND
THE POINT MARKED 'C' INDICATES THE WORKING
PLACE OF THE ABOVE NAMED MEN

to accompany this report. They employ 150 miners, 11 drivers, 10 day men, and the output averages 10,000 bushels per day when running.

Bellevue mine.

Owned and operated by William Huey and the heirs of John Gumbert, deceased. The head of the workings is in the second hill, a distance of two miles from the river, and the coal is transported over that distance by means of a stationary engine, horses, and a gravity plane. All of the butt entries here are driven to the outcrop, which supplies fair natural ventilation throughout the mine. They employ 140 miners, 10 drivers, and 17 day men, and the output averages 12,000 bushels of lump coal per day.

Robbins mine.

Owned and operated by William Robbins. It is worked on the single-entry or block system. The butt entries are driven 8 feet wide and 150 yards apart. Ventilation is produced by means of the exhaust steam from a stationary engine located in the mine, which connects with a shaft 170 feet in depth. Employs 150 miners, 7 drivers inside and 5 drivers outside of the mine, and the output averages 10,000 bushels of lump coal per day.

Blackburn mine.

Owned and operated by Thomas Foster, Sanford Clark, and John A. Wood. The head of the present workings are in the second hill, about one mile from the river. The coal is transported to the river by means of a stationary engine, gravity plane, and horses. It is ventilated by means of the exhaust steam from a pump in the mine, and a fire-basket located at the foot of a shaft 145 feet in depth; the volume of air passing through the mine was found to be 13,450 cubic feet per minute. They employ 200 miners, 9 drivers, 1 trapper, and 17 day men, and the output averages 13,000 bushels of lump coal per day.

Pine Run mines.

Operated by James Lynn & Co. The present workings are one and one half miles from the river, and the coal is transported by a steam locomotive. These mines comprise two separate workings, one called the "Abers Mine," and the other the "Finney Mine." The ventilation is produced by furnace power. The furnace is arched, and built of brick, on a stone foundation, and is 24 feet in length, 8 feet in width, $4\frac{1}{2}$ feet above the grate-bars to comb of arch, and 3 feet from the bars to furnace floor; it rises 2 feet from front to rear. The fire-bed is formed of two sets of grate-bars 5 feet each in length, giving a fire surface of 8×10 feet. They are, however, only using one set of the bars at present, which produces an air current near the mouth of the furnace of 27,500 cubic feet per minute, and by making a direction with the outside air, I found the current increased to 45,100 cubic feet per minute. The difference of the two observations shows the loss in motive power due to friction in the air-ways and workings.

They employ at the "Abers Mine" 80 miners, 3 drivers, 1 trapper, and 7 day men, and at the "Finney Mine," 170 miners, 8 drivers, and 6 day men, and the average total output of both mines is 20,000 bushels of lump coal per day.

John O'Neil is the superintendent.

Rock-Run mine.

Owned and operated by William J. Snodgrass. It is quite an old mine. The coal is hauled by mules from the workings to the check-house on the face of the river hill, a distance of 1,300 yards, and from the check house it passes down a gravity plane 1,100 feet in length to the tipple at the river. 80 miners, 6 drivers, and 10 day men are employed, and the average output is 8,000 bushels of lump coal per day when running.

Allequippa mine.

Owned and operated by Bailey, Wilson & Co. The present workings are in the third and fourth hills, a distance of about a mile and a half from the river. The mine is ventilated by furnace power. 180 miners, 3 trappers, 11 drivers, and the usual number of day men are employed, and the output averages 16,000 bushels of lump coal per day.

Camden mine.

Owned and operated by George and Addison Lysle. The present workings are in the second hill from the river. The coal is hauled by mules from the workings through a tunnel in the first hill to a check-house on the face of the hill, and thence it passes down a gravity plane 840 yards in length to the tipple at the river. Three cars are run down the plane at a time. 200 miners, 15 drivers, 2 trappers, and 18 day men are employed, and the output averages 14,600 bushels of lump coal per day. A stationary engine has recently been erected at this mine.

Amity mine.

Owned and operated by John C. Risher. The workings and improvements are all well arranged and in good condition at this mine. The present workings are in the second hill, and the coal is hauled by mules to and through a short tunnel in the first hill, and thence, on an outside road, to the check-house, a total distance of about 700 yards; and from this point it passes down a gravity plane of 750 yards in length to the tipple at the river, four cars being run down at the same time. 175 miners, 14 drivers, and 15 day men are employed, and the output averages 15,000 bushels of lump coal per day. The mine is ventilated by furnace power connected with a shaft and stack 90 feet in height.

Jacob Heasley is superintenent.

Stone's mine.

Operated by Joseph A., George W., William, Thomas, and John Stone. The coal is hauled from the interior of the mine to the pit mouth by mules,

and from there to the check-house by a steam locomotive, a distance of one and one half miles; it then passes down a gravity plane to the tipple at the river. The mine is ventilated by a furnace connected with a stack and shaft 80 feet in height. The volume of air passing through the furnace was found to be 20,300 cubic feet per minute. 150 miners, 8 drivers, 1 trapper, and 17 day men are employed, and the average daily output is 14,000 bushels of lump coal.

Pool No. 1.

Greensprings mine.

Owned and operated by Thomas Fawcett. The present workings are in the third hill, a distance of 2,966 yards from the river, and the coal is hauled from the mine to the check-house on the face of the river hill by means of a stationary engine and wire line; it then passes down a gravity plane 266 yards in length to the tipple. Ventilation is produced by the exhaust steam from a pump located near the head of the main entry. 120 miners, 9 drivers, and 14 day men are employed, and the output averages 11,000 bushels of lump coal per day.

Bellwood mine.

Owned and operated by William, John, and Michael Munhall. The workings are two and one quarter miles from the river, and the coal is transported over this distance by a steam locomotive, making a round trip in thirty minutes, with fifty cars at a trip. The mine is worked on the single-entry or block system, all entries being driven single. The butt entries are driven 160 yards apart, and shafts are sunk to the head of each, which supply a fair amount of air to the mine. 140 miners, 7 drivers, and 15 day men are employed, and the output averages 10,000 bushels of lump coal per day.

Hays' Streets Run mine.

Owned by the heirs of James Hays, deceased, and operated by Harry Bughman as trustees for the estate. The coal is hauled by mules from the workings to the check-house, and thence down a gravity plane to the base of the hill, from where it is taken to the river by a locomotive engine.

The coal bed here dips towards the south, and the water that collects in the low part of the mine is drawn out by means of a steam pump, located near the pit mouth, through a 4-inch pipe 400 yards in length. The fall from the pit mouth to inner end of pipe is reported at 12 feet. 220 miners, 14 drivers, and 16 day men are employed, and the output averages 15,000 bushels of lump coal per day.

Risher mine.

Owned and operated by I. D. Risher. Worked on the single-entry system. Ventilated by furnace power. The coal is hauled by mules to the check-house. It then passes down a gravity plane to the base of the hill,

and thence it is hauled by a stationary engine to the junction of the runs. A steam locomotive then takes it from there to the river. 125 miners, 10 drivers, 1 trapper, and 20 day men are employed, and the output averages 10,500 bushels of lump coal per day.

Walton's Pool No. 1 mine.

Owned and operated by Hon. Joseph Walton. It is operated principally on the single-entry system, although they recently commenced to drive the butt entries double. These entries are generally driven to the outcrop, which gives a fair velocity of air-current in the working places without the aid of mechanical means. The coal is transported from a point in the second hill to the check-house at the front pit mouth by means of a stationary engine and wire line, in trains of 46 cars each; and from that point it passes down a gravity plane to the tipple at the river. The electric telephone is used for communicating between the engineer and the station in the mine. 200 miners, 16 drivers, 14 day men at the mine, and 7 at the river, are employed, and the output averages 16,500 bushels of lump coal per day.

Beck's Run mine.

Owned by the heirs of James Hays, deceased; is operated by Harry Bughman as trustee for the estate. It is operated on the single-entry system, with air courses driven perpendicular to, and connecting, the butt entries at intervals of 200 yards. Ventilated by a furnace located on Butt entry No. 4, at a point 1,000 yards from the main entry. The furnace is 20 feet in length, 5 feet in width, and $6\frac{1}{2}$ feet from the floor to comb of arch. The shaft and stack connected with the furnace are 501 feet in height. The fire bed is formed of one set of *patent shaker* grate bars 5 feet in length. There is also another furnace located on the main entry at a point 435 yards from the pit mouth, which is connected with a shaft and stack 83 feet in height, and used mainly to remove the locomotive smoke from the mine.

The coal is hauled by locomotive power from the workings of the mine in the second hill, to and through a tunnel in the first hill, to the check-house on the face of the last-named hill, a distance of one and a quarter miles. It then passes down a gravity plane to the base of the hill, whence it is hauled to the river, in trains of twenty cars each, by another locomotive, an additional distance of one mile.

Butt entry No. 3 is driven 1,750 yards; No. 4, 1,850 yards; and No. 5, 1,000 yards. 190 miners, 13 drivers, 1 trapper, 1 furnace tender, 14 day men, and 1 engineer and a fireman on each locomotive. The output averages 12,000 bushels of lump coal per day.

Jones & Laughlin mine.

Owned and operated by Jones & Laughlin, exclusively to supply the

American Iron and Steel Works, which they also own. The head of the present workings is about four miles from the river. The coal is hauled from the workings by mules, to the entrance to the fourth hill, a distance of 3,000 yards, and from that point by a steam locomotive, through three hills to the check-house, a distance of one and a half miles. It then passes down a gravity plane, 1,300 in length, to the base of the front hill, and thence to the iron and steel works. 90 miners, 12 drivers, and 30 day men are employed at this mine, and the average output is 8,000 bushels of lump coal per day.

Ormsby mine.

Operated by the Birmingham Coal Company (Limited). The workings of this mine are contiguous to those of the *Bausman Mine*, operated by the same company. The coal from this mine is run to the river trade. The coal from both mines is hauled by a stationary engine to Spiketown, a distance of two miles, and from this point the coal intended for the river trade is transported through a tunnel in the front hill to the check-house, an additional distance of 3,300 yards. It then passes down a gravity plane to the base of the hill, whence it is hauled to the tipple at the river by a steam locomotive. This mine is ventilated by a steam fan, built by Crawford & McCrimmon, of Brazil, Indiana. It was erected during the present year, and has shown very satisfactory results. 170 miners, 52 boys, 12 drivers, and 6 day men are employed at this mine; and the output averages 13,000 bushels of lump coal per day.

Bausman mine.

Operated by the Birmingham Coal Company (Limited). The workings are contiguous to those of the *Ormsby Mine*, operated by the same company. The coal from this mine is run to the city trade. Transported from the mine to Spiketown by stationary engine, located at that place, and from there to the check-house at the face of the river hill by means of a steam locomotive. This mine is ventilated by means of the exhaust steam from the pumps, located at the foot of a shaft 100 feet in depth. It is worked on the single-entry system. 160 miners, 25 boys (miners), 12 drivers, and 6 day men are employed; and the average output is 12,000 bushels of lump coal per day.

Castle Shannon mines.

Owned and operated by the Castle Shannon Coal and Railroad Company. The present workings are located on Saw-Mill run, about three miles from the river. The coal is hauled from the mine to the check-house by mules, whence it passes down a gravity plane to the tipple at the railroad, where it is screened into cars of about the same capacity of the mine cars. It is then hauled by locomotive power to the head of the gravity plane on the face of *Coal Hill* fronting the river, whence it passes down another gravity

plane to the coal yard at the Castle Shannon depot. They employ 140 miners, 10 drivers, and 14 day men; and are producing about 8,000 bushels of lump coal per day, which is sold to the city trade. This mine is operated on the single-entry system, and ventilated by furnace power. James M. Bailey is general superintendent of the railroad and mines belonging to the company.

SAW-MILL RUN MINES.

Enterprise mine.

Located at Banksville on Little Saw-Mill run, at the terminus of the Little Saw-Mill Run railroad. Owned and operated by Hartley & Marshall. This mine is worked on the double-entry system, and ventilated by a furnace and a fan. A steam locomotive of English manufacture has recently been introduced to transport coal in the mine. Mr. Hartley reports that it is rendering good satisfaction. A stationary engine near the pit mouth is used to haul the coal from a double parting on the main entry. A portion of the coal from this mine is shipped to the railroad trade, and the other portion goes to the river trade. They employ 200 miners, 10 drivers, and 22 day men; and the output averages about 1,000 tons per day.

Venture mine.

Owned and operated by Gray & Bell. The workings of this mine are connected with those of the *Chess mine*, which they also own. Both mines are ventilated by *Guibal* fan. They employ 160 miners, 10 drivers, and 30 day men, and the average daily output is 10,000 bushels of lump coal. A small portion of the product of this mine is run to the river trade over the line of the Little Saw-Mill Run railroad, and the greater portion is transferred from that road to and over the line of the Pittsburgh and Lake Erie railroad to the Lake trade and Western markets.

Coal Ridge mine.

Owned and operated by Gray & Bell. They employ 36 miners, 3 drivers, and 6 day men, and the output is 2,000 bushels of lump coal per day. The coal is shipped principally to the Lake trade.

Eclipse mine.

Owned and operated by John Carlin & Co. The product of this mine is shipped to Cleveland and the Lake trade. The remaining portion of the coal in this mine is mainly in the form of ribs and pillars, which they are removing. They wash the dust coal and make it into coke. 110 miners, 8 drivers, 1 trapper, and 10 day men, are employed, and the average output is 8,000 bushels per day.

Chess mine.

Owned and operated by Gray & Bell. The workings of this mine connect with those of the *Venture* mine. The coal is taken out at the north side of the field, where it passes down a gravity plane to the run bed, and thence through a rock-tunnel, 1,326 yards in length, to Painter & Singer's rolling-mill. Three stationary engines are used to transport the coal from the mine to the mills. They employ 80 miners, 34 day men, and 5 drivers, and the output is about 5,000 bushels per day.

Fox mine.

Operated by Thomas Fox, in a small way, to supply a local trade. 45 miners, 3 drivers, and 3 day men are employed, and the output averages about 2,000 bushels per day. Ventilated by furnace power.

PETERS CREEK MINES.

Venetia mine.

Located at Venetia, on the line of the Pittsburgh and Wheeling division of the Baltimore and Ohio railroad. Owned and operated by Dr. David M. Anderson. The mine is worked on the double-entry system, and ventilated by furnace power. The volume of air passing through the mine was found to be 3,675 cubic feet per minute. He employs 25 miners, 1 driver, and 3 day men; and the output averages 1,500 bushels of lump coal per day, which is shipped mainly to the Wheeling market. He built a series of box-chutes for delivering coal to engines, and disposes of considerable quantities in that way.

Lockhart mine

Is just being opened by the Pittsburgh and Peters Creek gas coal company (Limited). They built a railroad tipple during the present year, and will soon be in shape for extensive operations.

Legler mine.

Owned by Jacob Legler, and operated, under lease, by Henry Florshim. It is located about a half mile north of Finleyville, on the line of the Pittsburgh Southern railroad, which connects with and is now owned by the Baltimore and Ohio railroad company. The product of this mine is shipped mainly to the Chicago market. 30 miners, 2 drivers, and 3 day men are employed; and the output averages 1,500 bushels per day. Ventilated by furnace power.

Peters Creek mine, No. 1.

Located one fourth of a mile north of Gastonville, on the line of the Pittsburgh and Wheeling division of the Baltimore and Ohio railroad. Is owned and operated by the Pittsburgh and Chicago gas coal company.

The improvements here are new and very substantial. They employ 40 miners, 2 drivers, and 8 day men; and the product is transported by rail. They run 1,500 bushels of lump coal per day.

Peters Creek mine, No. 2.

Located on the line of the Pittsburgh and Wheeling division of the Baltimore and Ohio railroad, about two miles north of Gastonville. It is owned by the Pittsburgh and Chicago gas coal company, and is only just being opened.

YOUGHIOGHENY RIVER MINES.

Penny mine.

Owned by John B. Sneathon, Frederick Wilson, David Linch, and Cyrus Robinson, present operators. The mine is worked on the single-entry system, and the butt entries are usually driven to the outcrop. Entry No. 9 connects with the workings of the *Robbins Mine*, on the Monongahela river. They employ 150 miners, 15 drivers, and 12 day men, and the output averages 12,000 bushels of lump coal per day, which is run to the river trade.

James O'Neill mine.

Operated by James O'Neill. The coal is hauled from the working places by mules to a parting on the main entry, and thence to the pit-mouth by a stationary engine and wire line. From that point, the cars are transported to the river by means of a locomotive engine. 100 miners, 10 drivers, and 7 day men are employed, and the output averages 9,000 bushels of lump coal per day.

Cornell and Werling mine.

Owned and operated by the heirs of William H. Brown. This is quite an extensive mine, worked on the single-entry or block system. The main entry is driven through to Wild Cat run, a distance of 1,600 yards, and continues on the south side of the run 140 yards into the second hill. The butt entries are driven with a little up-grade, so that the water will flow to the main entry, where a drain is provided to carry it out at Wild Cat run. The mine is well ventilated by furnace power. The furnace is built with a double arch—one arch over the other—6½ feet in width, 6 feet from grate-bars or fire-bed to under side of lower arch, and 3 feet more to under side of upper arch. The grate-bars are 3 feet above the floor. The fire-bed consists of two sets of bars, each set being 5½ feet in length. The front of fire-bed is placed 8 feet inside of furnace front. The stack is built of brick, 6½ feet square on the inside and 80 feet in height. The coal is hauled by mules from the working places to the parting on the main entry, 1,200 yards from the pit mouth, and thence to the pit mouth by means of a stationary engine and wire line, located near the pit mouth. From this point

the cars run by gravity to the tipple at the river, a distance of one mile, and the empty ones are returned by means of another stationary engine and wire line located near the pit mouth. They employ 200 miners, 10 drivers, and 35 day men, and the average daily output of lump coal is 16,000 bushels, which is run to the River trade. Considerable quantities of the *dust* coal is washed and sold to coke manufacturers.

Eagle Nest mine.

Owned and operated by the Greenoak coal company. The coal is nearly exhausted, and only a few men are employed at taking out ribs and pillars. The product of the mine is run by both river and rail.

Buena Vista mine.

Located at Buena Vista, and owned and operated by the South-West coal company, composed of E. C. Converse, O. D. Delano, B. F. Raferty, J. H. Deweese, John Shields, and William Duncan. This mine was opened during 1883, and the product is shipped over the Pittsburgh, McKeesport and Youghiogheny railroad to the National tube works at McKeesport and the Lake trade. This mine is worked on the double-entry system, and ventilated by furnace power. The cars are run from the pit mouth to the tipple on a gravity plane 900 feet in length, with a fall of 27 feet in that distance. They employ 145 miners, 10 boys, 4 drivers, and 4 day men.

Ocean mines, Nos. 2 and 3.

Owned and operated by the Ocean coal company. Mine No. 2 is a new mine, and has been operating throughout the present year. Worked on the double-entry system. Ventilated by furnace power. The product of the mine is transported over the line of the Pittsburgh, McKeesport and Youghiogheny railroad.

Mine No. 3 is located about one mile down the river from Mine No. 2, owned and operated by the same company. It is being opened, and the underground workings are intended to connect with those of the No. 2 mine.

Blythe mine.

Located at Blythedale, and owned and operated by the Lake Erie gas coal company. Worked on the double-entry system, and employs 140 miners, 10 boys, and 10 day men. The product is shipped over the line of the Pittsburgh, McKeesport and Youghiogheny railroad.

West Newton Shaft mine.

Owned and operated by the West Newton coal company. Located on the west side of the river, and connected with the shaft on the east side by a tunnel driven in the coal under the river. Employs 110 miners, 5 boys,

and 8 day men. The product is transported over the line of the Pittsburgh, McKeesport and Youghiogheny railroad.

Port Royal mine.

Owned and operated by J. M. Owens & Co. The coal is reached by a shaft, and the mine is connected with another one on the east side of the river, owned by the same company, by means of a tunnel in the coal under the river bed. This is a new mine, and only being fairly opened. The entries are being driven double throughout the mine. The product is transported over the Pittsburgh, McKeesport and Youghiogheny railroad.

TOM'S RUN MINES.

Clark mine.

Owned and operated by Clark, Linn & Co. This mine was opened during 1883, and they have done but little more than drive entries so far. The coal is reached by a short slope, and the coal is elevated to the tipple floor by a stationary engine and wire line. The coal seam here is about level with the railroad grade.

Federal Springs mine.

Located on Tom's run, about a half mile below the Clark mine. Operated, under lease, by W. J. Steen. Worked on the single-entry system so far, with natural ventilation. Employs 42 miners, 3 drivers, and 5 day men; and the output averages 2,500 bushels per day. The seam is about 15 feet above railroad grade at this place. Thomas S. Williams is mine boss.

Keightly mine.

Operated by Frank Keightly; is just being opened. Located on Tom's run between the Federal Springs and Tom's Run Mine.

Tom's Run mine.

Operated by Harper, Speese & Co. This mine was opened during 1883. The bottom of the coal seams is about level with railroad grade, and the coal is elevated or drawn up a short incline to the tipple-floor by means of a stationary engine and wire line. 65 miners, 2 drivers, and 5 day men are employed; and the output averages 150 tons of lump coal per day.

Smith mine.

Located three fourths of a mile below the Tom's Run Mine; was opened, in 1883, by A. B. Cornell, J. C. Smith, and E. W. Powers, present operators. The coal is hauled up an incline from inside the pit mouth to the tipple-house, by means of a stationary engine and wire line, 2 to 3 cars at a time. 28 miners, 1 driver, and 5 day men are employed; and the output is 80 tons per day.

Pioneer mine.

Opened in 1883 by Haselton, Jacobs & Co. The bottom of the coal seam here is about level with railroad grade. The cars are hauled from the mine up a slope to the tipple-floor by a stationary engine and wire rope. The mine is ventilated by natural means. They employ 25 miners, 1 driver, and 6 day men; and the daily output averages 75 tons of lump coal when running. K. Head is mine boss.

PAINTER'S RUN MINES.

Essen mine.

Located at Essen, and operated under lease by Sanford & Co. Worked on the double-entry system. They erected a six-foot Murphy ventilating fan at this mine during the present year. Employs 100 miners and 5 day men, and the output is about 300 tons of lump coal per day. Jerry Dillon is mine boss.

Beedle mine.

Owned and operated by Beedle Brothers. It is a slope mine, and only just being opened.

MONTOUR'S RUN MINES.

Beech Cliff mine.

Owned and operated by the Imperial coal company. Worked on both double and single-entry systems. Ventilated by furnace. Operations have been dull here through the greater part of the year. They employ at present 70 miners, 15 boys, and 10 day men.

Montour mine.

Owned and operated by the Imperial coal company. Operated on both double and single-entry systems. This mine was found in good working condition.

MINES ON THE PITTSBURGH, CINCINNATI AND ST. LOUIS RAILROAD.

Keystone mine.

Located near the line of the Pittsburgh, Cincinnati and St. Louis railroad, one fourth of a mile east of Hanlon station. The main entry and air course are driven parallel with each other, and the balance of the mine is worked on the single-entry or block system. The coal bed here dips toward the south-east at the rate of about $1\frac{1}{4}$ foot per 100 feet. 32 miners, 2 drivers, and 3 day men are employed, producing 2,000 bushels of lump coal per day, which is shipped principally to Chicago and the Lake trade. Samuel Davidson is mine boss.

Walnut Hill mine.

Located at Midway. It has not been in operation for several years.

Midway Block Coal mine.

Located at Midway, and owned and operated by G. W. Crawford. A portion of this mine lies on the north side of the railroad, and the portion containing *block* coal lies on the south side, the two portions being connected by an entry driven across and under the railroad. The coal on the north side possesses the usual features and appearance of typical *Pittsburgh* coal, while a large portion of that on the south side called *block coal* is different in structure and appearance. Here we find a thin parting about five inches from the bottom, and the other partings absent. The portion from this parting to the over-clay measures four feet six inches in thickness, and is the part which they mine out. The over-clay is six inches in thickness. The roof members preserve their usual order and thickness. 80 miners, 6 drivers, and 23 day men are employed; and the daily output amounts to 235 tons. R. M. Ulp is superintendent, and Thomas Stark is mine boss.

Primrose mine.

Operated by T. B. Robbins. Worked on the single-entry system. Ventilated by furnace power, and the mine is in good working condition. Employs 125 miners, 8 day men, and the output for the year is reported at 55,673 tons.

Jumbo mine.

Operated by T. B. Robbins. Worked on the single-entry system at present, but they expect to use the double-entry system after the mine is more advanced. Ventilated by natural air currents. Employs 80 miners, 1 trapper, 9 drivers, and 6 day men; and the output averages 300 tons per day.

Willow Grove mine.

Located on the line of the Pittsburgh, Cincinnati and St. Louis railroad, one mile east of McDonald station, and seventeen miles from Pittsburgh. Owned by Woods & Friend, of Pittsburgh, and operated under lease by T. B. Robbins. The south side of this mine contains some block coal which they are now mining. They employ 150 miners, 8 drivers, and 9 day men; and the output averages 300 tons of lump coal per day.

Star mine.

Owned and operated by G. Mankedick. Worked on the single-entry system, and ventilated by furnace power. Employs 60 miners, 3 drivers, and 3 day men; and the output amounts to 150 tons per day.

Briar Hill mine.

Operated by Patterson & Sauters. Worked on both single and double-entry systems. Ventilated by furnace power. Employ 100 miners, 5 drivers, and 5 day men; 5 mules inside and 2 outside. The output amounts to 6,500 bushels per day. This mine was found in good condition. The mining boss is Joseph Fielding.

Laurel Hill mine.

Owned and operated by W. P. Rend. Worked on the double-entry system. The coal here is fifty feet above railroad grade. The coal here is all mined by the use of the "Harrison" mining machine, thirty-two of which are used. The machine is used to *bear-in*, or make the under cuts and side cuts. It requires one man to handle each machine, and a boy to scrape the dust away from the cutter. One man and a boy can bear-in three rooms to a depth of four feet and twenty-three feet in width per day, averaging about thirty-five tons. Another set of men blasts the coal down and loads it into wagons. The cutters are paid fifteen cents per ton for room work and twenty-five cents per ton for entry work. The loaders are paid forty cents per ton. The machines are worked by compressed air, carried into the workings through cast-iron pipes. The compressing engine is located near the pit mouth, and a battery of nine boilers supplies the steam for the compressor. These machines have been in use for the last two years at this place, and pronounced a success, both as to manner of working and economy. The coal is hauled from the workings by locomotive power. These works are run both day and night. They employ 8 drivers and 22 day men, in addition to the cutters and blasters; and produce 500 tons per day. They make lump, nut and pea coal. The dust is made into coke. They have 24 ovens of the bee-hive pattern. Thomas Andrews is general superintendent, and Earnest Craig mining engineer.

Cherry mine

Owned and operated by Morris McQue. Worked on the single-entry system. Ventilated by natural means. Employs 65 miners, 4 drivers, and 7 day men, and produces 3,000 bushels per day.

Ewing mine.

Operated by Ewing & Gordon. Worked on the single-entry system. It has only recently been opened up. Employ 30 miners, 1 driver, and 3 day men, and produce 2,000 bushels per day.

National mine.

Owned and operated by the National coal company. Worked on the single-entry system. Ventilated by exhaust steam from a steam-pump in the mine. Employ 75 miners and 6 day men. This mine has recently been

much improved. A stationary engine has been put in place to haul the coal from the mine, and the whole mine is in good working condition.

Oak-Ridge mine.

Owned by the Oakridge coal company, (Limited,) John Nusser, president; George W. Schluderberg, secretary and treasurer; Charles A. Wilhelm, manager and superintendent of mine. The present workings are in the second hill, whence the coal is hauled by mules to and through the first hill, 591 yards, and on an outside road of 100 yards to the check-house on the face of the hill. It then passes down a gravity plane to the tipple at the railroad. Ventilation produced by furnace power. They employ 78 miners, 7 drivers, and 5 day men, and the output averages 4,500 bushels of lump coal per day.

McConnell mine.

Owned and operated by Joseph McConnell. Worked on the single-entry system. Ventilated by furnace power. Employs 30 miners, 2 drivers, and 3 day men, and produces 1,500 bushels per day.

Fort Pitt mine.

Owned and operated by the Fort Pitt coal company. Worked on the single-entry system. Ventilated by natural means. Employ 90 miners and 25 day men; and the reported production for the year has been 27,900 tons.

Camp Hill mine.

Owned and operated by W. J. Steen. Worked on the single-entry system. Ventilated by furnace power. Employs 40 miners, 2 drivers, and 2 day men; and produces 3,500 bushels per day.

Grant mine.

Owned and operated by the Grant coal company. Worked on the single-entry system, and ventilated by furnace power. Employ 140 miners, 10 drivers, and 10 day men; and produced 39,800 tons during the present year.

Mansfield mines, Nos. 1 and 2.

Owned by the Mansfield coal and coke company. Have worked but little during the last year. They were found in good working condition.

Idlewood mine.

Owned and operated by the Idlewood coal company. Worked on the single-entry system, and ventilated by furnace power. Employ 62 miners, 5 drivers, and 3 day men; and produced 3,500 bushels per day.

CHARTIERS VALLEY RAILROAD.

Glendale mine.

Located on the Chartiers Valley railroad, three fourths of a mile south of Mansfield. Owned and operated by John and Stephen Gregg. Ventilated by furnace power, until the stack was blown over by wind during the early part of this year; since then they have used natural ventilation. They employ 32 miners, 3 drivers, and 3 day men, and the output averages 2,000 bushels of lump coal per day.

Mansfield mine, (New,) No. 2.

Owned by the Mansfield coal and coke company. Ventilated by furnace power, with a shaft and stack 75 feet in height. The volume of air passing through the mine was found to be 23,400 cubic feet per minute. Employ 230 miners, 8 drivers, 1 trapper, and 15 day men, and produce about 500 tons of lump coal per day. They make three grades—lump, nut, and dust, in the proportions of 66 per cent. lump, 17 per cent. nut, and 17 per cent. dust coal.

Bowden mines.

Owned and operated by Bowden, Bussey & Black. Main entry and air-course are driven parallel with each other, and the butt entries are driven single. Ventilated by furnace power. Employ 60 miners, 6 boys, 4 drivers, and 10 day men; produce 150 tons per day. Workings were found in good condition. David Bowden is superintendent.

Glass-House mine.

Operated by the Bane Brothers. Worked on the single-entry system. Ventilated by means of a fire-basket. Employ 18 miners, 1 driver, 1 day man; produce 40 tons per day.

Summer Hill mine.

Owned and operated by Frank Armstrong. Worked on the single-entry system. Ventilated by a furnace and the exhaust from a pump in the mine. Employs 110 miners, 9 drivers, 5 day men, and produced 46,465 tons during the year.

Bowerhill mine.

Owned and operated by A. J. Schultz. Worked on both double and single-entry systems. Ventilated by natural air-currents. Employs 100 miners, 5 drivers, and 5 day men; produces 6,500 bushels per day.

Bridgeville mine.

Owned by A. J. Schultz. This mine is just being opened, and has not commenced to operate.

Hastings Slope mine.

Operated under lease by W. J. Morgan. Worked on single-entry system. Ventilated by furnace power. Employs 70 miners, 7 drivers, and 6 day men. Produces 5,000 bushels per day. The ventilation here is good; but considerable inconvenience is experienced on account of the coal lying to the dip, producing large quantities of water, which is taken out by means of a steam syphon pump.

Cook's mine.

Operated by Cook & Co. on a small scale. Worked on the single-entry system, and ventilated by natural air currents. Employ 17 miners and 2 drivers. The product of this mine is principally sold to the local trade of the vicinity.

Shupe mine.

Owned and operated by Shupe & Co. Worked on the single-entry system, and ventilated by natural means. Employ 60 miners, 4 drivers, and 6 day men; and produce 3,500 bushels per day.

Allison's mine.

Owned and operated by Jonathan Allison. Worked on the single-entry system, and ventilated by natural means. Employs 30 miners, 5 boys, 3 drivers, and 7 day men; and produces 3,000 bushels per day.

Harding's Shaft mine.

Owned and operated by V. Harding; worked on the double-entry system, and ventilated by the exhaust steam from a pump in the mine. The coal is reached here by a perpendicular shaft, 150 feet in depth. Another shaft is used for ventilation, and for a manway. Employs 22 miners, 2 drivers, and 4 day men, and the output amounts to 1,500 bushels per day. The coal is sold to the Washington market, and a small portion is shipped to Waynesburg.

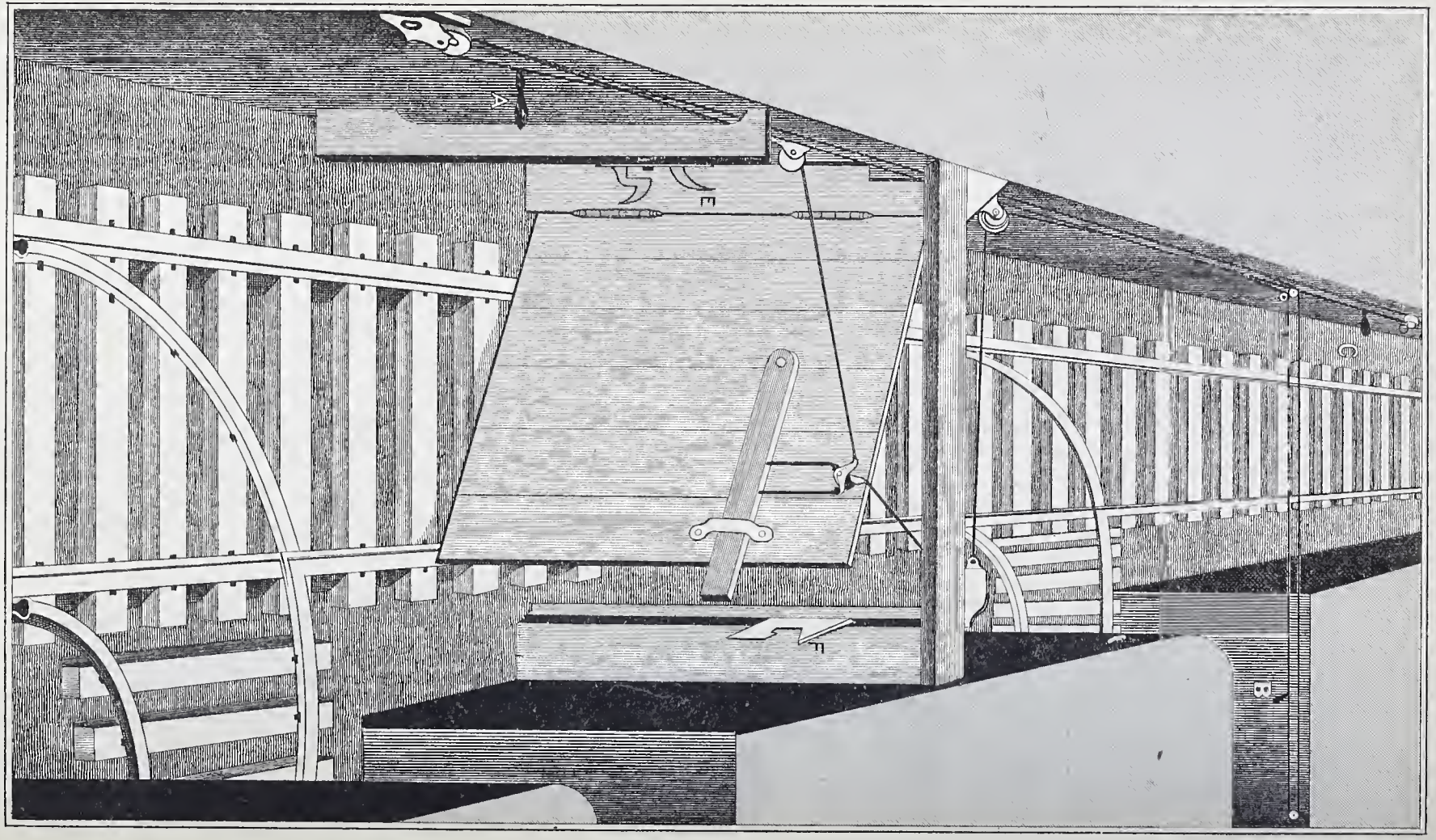
GREENE COUNTY MINES.

Waynesburg Shaft mines.

Located one mile east from Waynesburg, and owned by Sadler, King & King. The coal is reached by a shaft 50 feet in depth. They employ 10 miners and 2 day men, and produced 4,800 tons during the last year.

Sliding Rock mine.

Operated under lease by J. R. Wilson. Employs 19 miners and one day man. Produces 1,000 bushels per day. This mine is located about two miles east from Waynesburg on Ten Mile run.


A
E
G
H

Improved Attachments for Ventilation of Mines.

The drawing represents a main entry and two butt entries. The door is located between the two butt entries, and is operated from three points, as follows: The driver, in passing through the main entry, when he comes within reach of the handle A, pulls on said handle, which will lift the latch D out of hook F, and, continuing to draw, will open the door and secure the latch D in hook E, for the purpose of holding the door open. Having passed through the door, he turns into the butt entry and pulls on handle B, which will lift the latch D out of hook E, and, continuing to draw, will close the door and secure the latch in hook F. If the driver is coming the reverse way, he pulls on handle B, which will open the door the same as handle A. Having passed through, he pulls on handle A, which will close the door the same as handle B. If the driver is passing on the main entry, he opens the door with handle A, and closes the door with handle C. Coming the reverse way, he opens with handle C, and closes with handle A.

The attachments are of simple construction, not liable to get out of order, and easily mended. They can be fitted to any door, and can be arranged to haul any number of cars through it; and is also arranged that if the door in opening or closing meets any obstruction, the driver can stop before any harm is done.

The advantages and benefits derived from their use are many. I will mention a few. The trapper boys are done away with, thus lessening the duties of the mine boss. There need be no expense from driving air drifts, or break through to avoid a door, on account of the trouble and expense of opening and closing it.

The driver need not haul slow, thinking the trapper boy is not at his post, nor need he run before or behind his train to open or close a door. He opens and closes the door without changing his position on his train.

The accidents common at doors are done away with, as the driver knows whether the door is open or closed. The door latches securely, never stands ajar. The attachments in one month will save what they cost. No further expense of $15 or $18 per month for every door in the mines, or the driver continually losing time in stopping his train to open and close the doors.

They are no experiment, having been in constant use in a number of mines of the Chartiers Valley railroad for over a year, giving complete satisfaction.

Any operator or mine manager wishing to give these attachments a trial can do so by dropping us a note. We will put in any mines a set of these attachments for trial, and if not as we represent them, we will take them out without any cost to the operator. Any mine operator can secure them on the installment system; said installment will not exceed a trapper boy's wages. Within a few months he can pay the entire cost; thereafter it will be a clear saving for as many years as he wishes to use them.

Steam Fan for Ventilating Mines.

The about cut represents a steam fan for ventilating mines. The fan is constructed entirely of iron; is simple and compact in form. The casing is made of wood, which is not shown in the above cut. The Birmingham Coal Company have one of these fans in use at the Ormsby and Bausman mines, and report it to be working very satisfactorily. The manufacturers guarantee a discharge of 40,000 cubic feet per minute. Two sizes of this fan are manufactured, one six feet in diameter and the other eight feet in diameter.

List of Fatal Accidents.

Peter Smith was killed December 27, 1883, in room No. 47 of butt entry No. 8 of the Fort Pitt mine, by a fall of the over-clay. Aged thirty-five years, and leaves a widow and three children.

Neel Mullen was killed February 22, 1884, by a fall of over-clay in the Hastings mine. Aged thirty-eight years, and unmarried.

William Martin was killed July 1, 1884, in the Keeling mines, by a fall of the over-clay. Aged fifty years, married.

Hugh Russel was killed November 30, 1883, in the Scott Haven mine, by a fall of over-clay, in No. 2 face entry. Aged fifty years, and left a widow and six children.

James Steveson was killed April 14, 1884, in the Lovedale mine, by an explosion of *fire-damp*. Leaves a widow and two children.

James Painter was killed April 14, 1884, in the Lovedale mine, by an explosion of *fire-damp*. Leaves a widow and two children.

Jacob Ammon was killed April 17, 1884, in the Eclipse mine, on Saw-Mill run, by a fall of coal, while making a bearing-in on a room pillar. Aged fifty-six years. Married, and leaves a widow and one child.

Andrew Utter was killed April 25, 1884, in the Keeling mines. He was riding on the cars, and a hitching or coupling broke, when he fell between two cars, resulting in his death.

Fred. Hess was injured by a fall of over-clay in the Lower Walton mine on the 2d of May, 1884, and died on the following day. Aged eighteen years, and unmarried.

Elisha Ross was killed May 14, 1884, in the Pine Run mine, by a fall of over-clay. Aged twenty years, and unmarried.

Louis Stroler was killed June 27, 1884, in the Essen mine, by a fall of over-clay in room No. 7, and entry No. 7. Aged twenty-six years, and unmarried.

Philip Flinn was killed June 23, 1884, in the Grant mine, by a fall of over-clay.

William Gunster was killed June 25, 1884, at Keeling's, by jumping from an empty train. His foot caught on a side chain, which caused his body to fall under the cars while in motion. Twenty cars passed over him, producing almost instantaneous death. Aged fifty-one years, and married.

John McWhorter was killed July 23, 1884, in room No. 53 of the Bowden mine, by over-clay. Aged sixty-five years, and married.

Jeremiah Holland was injured August 2, 1884, by a fall of slate in the Ocean mine, and died from the effects thereof one week after. Aged eighteen years, and unmarried.

Antonia Barr was killed August 15, 1884, by a fall of coal in the Midway mine. Aged forty-seven years.

Charles Fields was killed October 27, 1884, by a fall of coal in room No. 53, entry No. 3, of the Eclipse mine, on the Monongahela river. Aged twenty-nine years; leaves a widow and no children.

Edward Boyle was injured by a fall of over-clay in Risher's mine, on March —, 1884, and died the 30th of the same month.

Alexander Rowe was killed November 6, 1883, in No. 7 entry of Horner & Roberts mine, by being squeezed between two cars in passing around a curve. He was the boss-driver. Aged thirty-five years; married, and leaves a widow and six children.

List of Injuries, (Not Fatal.)

Jacob Smith had a leg bruised by falling slate in Amity mines, February, 1884. Aged forty-four years, and married.

Philip Weaver had a leg broken by a fall of roof coal in the Castle Shannon mines, during February, 1884. Aged twenty-two years; unmarried.

Christopher Hardley had a leg broken by a fall of over-clay in the Cornell & Werling mine, during March, 1884. Aged forty-eight years; married.

William Kenoyon had a leg broken by a fall of over-clay in room No. 32 of entry No. 9, in the Horner & Roberts mine, March 20, 1884. Married.

Edward Boyle injured by a fall of over-clay in Street's Run mines, March 18, 1884. Aged fourteen years, and unmarried.

George Britton was burned by an explosion of fire-damp in the Imperial mine, March 10, 1884. Has a wife and four children.

Thomas E. Williams was injured by a fall of over-clay in the Street's Run mines, during April, 1884. Married.

William Robison had a leg bruised by being caught between coal cars, April 5, 1884, in the Enterprise mine.

Clark Bowers had a leg broken by coal cars in the New Eagle mine, April 23, 1884. Aged eighteen years, and unmarried.

Jacob Percy had a hand bruised by falling slate in Oak Ridge mine, on May 21, 1884. Aged forty years, and married.

Robert Warren had an arm broken in the Cornell & Werling mine, on May 1, 1884. Unmarried.

William Hall had a toe crushed by coal cars in the James O'Neill's mine, during May, 1884. Aged twenty years, and unmarried.

John Bowers, injured slightly by coal cars in New Eagle mine, on May 10, 1884. Aged twenty-two years, and unmarried.

J. Ritchard, injured about his head by falling over-clay in Oak Ridge mine, June 10, 1884.

David Chester was injured, or squeezed, between coal-cars and a trap-door in the Cincinnati mine, in June, 1884.

Luke Flood had his hip dislocated by falling over-clay in the Grant mines, July 11, 1884. Married.

John Bardo was injured in the leg and back by falling over-clay in Oak Ridge mine, August 15, 1884. Aged fifty-five years, and married.

Valentine Lorenze was injured in his back by falling over-clay in Oak Ridge mines, August 15, 1884. Aged fourteen years.

L. B. Frank had a leg broken by falling over-clay in the Oak Ridge mine, August 20, 1884. Aged fifty-four years, and married.

Fortunato Corazzolle had a leg broken in Robbins mine, September 30, 1884. Aged twenty years, and unmarried.

Honores Solmont had a hip dislocated in Robbins mine, September 15, 1884. Aged twenty-eight years, and unmarried.

Frank Bailey had his face bruised by a powder blast in Bower Hill mine, September 9, 1884. Aged fifteen years.

George Gibbons was slightly injured by falling over-clay in Courtney mine, September 26, 1884. Aged twenty years, and unmarried.

Frank Frye was quite seriously injured by falling over-clay in the Ivile mine, June 14, 1884.

John Pepkie was injured by an explosion of fire-damp in the Rankin mine, June 27, 1884.

Duncan McPherson was injured by explosion of fire-damp in the Rankin mine, June 27, 1884.

George Taylor had two fingers crushed by falling over-clay in the Enterprise mines, October 17, 1884. Aged twenty-nine years, and unmarried.

John Smith had a leg broken by the dilly rope in the Enterprise mine, October 22, 1884. Aged thirteen years, and unmarried.

John Thompson had a foot cut by falling over-clay in the Enterprise mine, October 17, 1884. Aged sixty years, and married.

William Barnett had his left eye knocked out by a lump of coal in the Walton mine, October 23, 1884.

John Craig was injured by falling over-clay in the Venetia mine, during November, 1884.

Thomas Kersop was injured in the Enterprise mine, November 5, 1884.

Lewis Simmons had two toes cut off by falling over-clay in the Catsburgh mine, November 22, 1883.

Frederick Bell was slightly injured by falling over-clay in the Catsburgh mine, November 23, 1884.

William Laws had a leg sprained in Cornell & Werling mine, in November, 1883.

John Wright had a finger mashed, and otherwise slightly injured about

his head by falling over-clay in Horner & Roberts mine, November 27, 1883.

A. Baurm had two fingers cut from his right hand by falling over-clay November 26, 1883, in the Glendale mine.

James Massey was injured by an explosion of fire-damp in the Enterprise mine, December 27, 1883, but was able to work again in a few weeks.

TABLE I.—SHOWING NAME AND LOCATION OF COLLIERIES IN THE FIRST BITUMINOUS MINE DISTRICT.

NAME OF COLLIERY.	Name of Company.	County.	Name of Superintendent.	Post-Office Address.
Black Hawk,	Black Hawk Coal Company,	Washington,	John Smith,	Fredericktown.
Knob,	Knob Coal Company,	do.	Samuel H. Pearsoll,	West Brownsville.
Greenfield,	J. S. Neel.	do.	P. J. Forsythe,	Coal Centre.
Globe,	Musgrave & Co.,	do.	Robert Greeg,	Woods' Run.
Eclipse,	J. S. Neel,	do.	P. J. Forsythe,	Coal Centre.
Caledonia,	T. J. Woods & Co.,	do.	T. J. Woods,	Woods' Run.
Champion,	Morgan & Dixon,	do.	L. W. Morgan,	California.
Wood's Run,	W. H. Gregg & Co.,	do.	W. H. Greeg,	Woods' Run.
American,	F. H. Coursin,	do.	Benjamin Farady,	Do.
Peacock,	Jonas Caruthers,	do.	Jonas Caruthers,	Do.
Clipper,	Clipper Coal Company,	do.	Thomas Briggs,	Allenport.
Rostraver,		Westmoreland,	Abraham Rupert,	Lock No. 4, Washington county.
Iron City,	Phillips & Metcnzwyre,	do.	Solomon Strope,	Wescoe, Washington county.
Columbia,	J. T. Jones,	do.	J. T. Jones,	do. do.
Webster,	William Guffy,	do.	William Guffy,	Webster.
Gilmore,	Heirs of John Gilmore,	do.	Noah Gilmore,	do.
Stockdale,	Venture Coal Company,	Washington,	John Crumbrle,	Sunny Side, Allegheny county.
Millesville,	Robert Jenkins,	Allegheny,	Robert Jenkins,	do. do.
Rankin,	Henry Rebka,	do.	Henry Rebka.	do. do.
Robinson,	Abe Hays,	Washington,	Thomas Hutchinson,	Monongahela City.
Black Diamond,	W. H. Brown's Sons,	do.	Henry Louttit,	do.
Ivii,	James Jones,	do.	James Jones,	do.
New Catsburgh,	Louis Stalb,	do.	Adam Kell,	do.
New Eagle,	Campbell & Co.,	do.	John McKapee,	do.
Old Eagle,	W. H. Brown's Sons,	Allegheny,	John Perry,	Elkhorn.
Courtney,	Courtney Coal Company,	Washington,	Phin. Kennedy,	Courtney.
Garfield,	J. S. Neel,	do.	Milo Gibson,	do.
Buffalo,	J. J. Staltler,	do.	Free Anderson,	do.
Cincinnati,	J. S. Neel,	do.	George Lochart,	do.
New Coal Bluff,	Peters' Creek and Monongahela Gas Coal Co.,	do.	Evan Beadle,	Coal Bluff.
Cliff,	Harvey Hutchinson,	do.	Robert Greenhalgh,	do.
Banner, No. 1,	John M. Risher,	do.	John M. Risher,	Sh re Oaks.
Banner, No. 2,	do.	do.	do.	do.
Wenona,	Wenona Coal Company,	Allegheny,	William Skillen,	do.
Hilldale,	Hilldale Coal Company,	Washington,	D. H. Lynch,	do.
Upper Walton,	Joseph Walton & Co.,	Allegheny,	John Rike,	Elizabeth.
Jones,	Thomas Jones,	do.	Thomas Jones,	do.
Harvey O'Neil,	O'Neil Company,	do.	Harvey O'Neil,	do.
Lower Walton,	Joseph Walton & Co.,	do.	John Rike,	do.
West Elizabeth,	O'Nell & Co.,	do.	J. N. Large,	do.
Horner & Roberts,	Horner & Roberts,	do.	Samuel Roberts,	do.
Lovedale,	John A. Woods & Sons,	do.	John Hollingshead,	do.
Bellevue,	Bellevue Coal Company,	do.	William Huey,	do.
Robbins,	William Robbins & Co.,	do.	William Robbins,	Coal Valley.

Blackburn,	Foster, Clarke & Co.,	do.	Thomas Foster,	do.
Pine Run, No. 1,	John O'Neil,	do.	John O'Neil,	do.
Pine Run, No. 2,	do.	do.	do.	do.
Rock Run,	W. J. Snodgrass & Co.,	do.	I. B. Scott,	Camden.
Allequippa,	Bailey, Wilson & Co.,	do.	James Wilson,	do.
Camden,	George Lysle & Sons,	do.	Joseph Griffiths,	do.
Amity,	J. C. Risher & Co.,	do.	S. S. Crump,	Dravosburgh.
Stone's,	William Stone's heirs,	do.	G. W. Stone,	McKeesport.
Green Springs,	Thomas Fawcett,	do.	Thomas Carrick,	Braddock.
Beilewood.	Munhall Bros.,	do.	John Munhall,	Homestead.
Hayes' Streets Run,	Hays estate,	do.	John Watson,	Hope Church.
Risher's,	J. D. Risher,	do.	Charles Giles,	do.
Walton,	Joseph Walton & Co.,	do.	Morris Capp,	Water street, Pittsburgh.
Beck's Run,	H. B. Hays & Bro.,	do.	Peter Trautman,	do. do.
Jones & Laughlin's,	Jones & Laughlin,	do.	James Doran,	South Side, Pittsburgh.
Ormsby,	Keeling Coal Company,	do.	Joseph Keeling,	do. do.
Bausman,	do.	do.	do.	do. do.
Castle Shannon,	Castle Shannon Coal Company,	do.	James M. Bailey,	do. do.
Fox,	Thomas Fox,	do.	Hugh Munay,	Temperanceville.
Chess,	Graham & Bell,	do.	Martin Gray,	Banksville.
Eclipse,	John Carlin & Co.,	do.	do.	do.
Coal Ridge,	Graham & Bell,	do.	do.	do.
Venture,	do.	do.	do.	do.
Enterprise,	Hartley & Marshall,	do.	Rodger Hartley,	do.
Peters' Creek, No. 1,	Peters' Creek Coal Company,	Washington,	John Lawrence,	Gasconville.
Peters' Creek, No. 2,	do. do.	do.	do.	do.
Legler's,	Henry Florshim,	do.	H. Florshim,	Finlayville.
Lockhart,	Pittsburgh & Peters' Creek Gas & Coal Co.,	do.	Charles Stein,	Venetia.
Venetia,	David M. Anderson,	do.	D. M. Anderson,	do.
Penny,	David H. Lynch,	Allegheny,	George Crouch,	McKeesport.
James O'Neil,	James O'Neil,	do.	James O'Neil,	do.
Cornell & Werling,	W. H. Brown's Sons,	do.	Robert Carnell,	Boston.
Eagle Nest,	Green Oak Coal Company,	do.	William Radcliffe,	Coultersville.
Buena Vista,	South-West Coal Company,	do.	William Duncan,	Buena Vista.
Ocean, No. 1,	Youghiogheny Coal Company,	do.	James Matthews,	Scott Haven.
Ocean, No. 2,	do. do.	do.	do.	do.
Blythe,	Blythe & Co.,	Westmoreland,	John Blythe,	Blythesville.
West Newton Shaft,	West Newton Coal Company,	do.	A. W. Osborne,	West Newton.
Port Royal,	Port Royal Coal Company,	do.	John Redfern,	Fitz Henry.
Keystone,	Keystone Coal Company,	Washington,	Samuel Davidson,	Keystone.
Walnut Hill.				
Midway,	G. W. Crawford,	do.	R. M. Ulp,	Midway.
Primrose,	T. B. Robbins,	do.	T. B. Robbins,	do.
Jumbo,	do.	do.	do.	do.
Willow Grove,	do.	do.	do.	do.
Star,	Menedick,	do.	William McGwigle,	do.
Brier Hill,	Patterson, Sauters & Co.,	do.	J. D. Sauters,	McDonald.
Laurel Hill,	W. P. Rend,	do.	Hugh Knox,	do.
Cherry,	Morris McCue,	Allegheny,	Morris McCue,	Walker's Mill.
Ewing,	Ewing & Gordon,	do.	J. W. Ewing,	do.
National,	National Coal Company,	do.	Edward Fisher,	Noblestown.
Oak Ridge,	Oak Ridge Coal Company,	do.	Charles Wilhelm,	Oakdale.
McConnell,	Joseph McConnell,	do.	Joseph McConnell,	do.

TABLE I.—FIRST BITUMINOUS MINE DISTRICT—*Continued.*

NAME OF COLLIERY.	Name of Company.	County.	Name of Superintendent.	Post-Office Address.
Fort Pitt,	Port Pitt Coal Company,	Allegheny,	J. E. McCrickett,	397 Liberty street, Pittsburgh.
Camp Hill,	David M. Steene,	do.	David Steene,	Mansfield.
Grant,	Grant Coal Company,	do.	George Z. Hosack,	do.
Mansfield, No. 1,	Mansfield Coal and Coke Company,	do.	Robert Bell,	do.
Mansfield, No. 3,	do. do.	do.	do.	do.
Idlewood,	Phœnix Gas and Coal Company,	do.	F. C. Negley,	Fourth and Try streets, Pittsburgh.
Glendale,	Greeg Bros.,	do.	S. B. Greeg,	Mansfield.
Mansfield, No. 2,	Mansfield Coal and Coke Company,	do.	Robert Bell,	do.
Bowden,	Chartiers Valley Coal and Coke Company,	do	David Bowden,	do.
Glass-House,	William Bains,	Washington,	William Bains,	Woodville.
Summer Hill,	Frank Armstrong,	Allegheny,	Frank Armstrong,	do.
Bower Hill,	A. J. Schultz,	do.	do.	do.
Bridgeville.				
Hastings,	W. J. Morgan,	do.	W. J. Morgan,	Bridgeville.
Cooke's,	J. V. H. Cooke,	Washington,	J. V. H. Cooke,	Canonsburg.
Shupe & Co.,	Shupe & Co.,	do.	Allet Shupe,	do.
Allison's,	John Allison,	do.	Jonathan Allison,	Washington.
Harding Shaft,	C. B. Harding,	do.	C. B. Harding,	do.
Essen,	Sanford & Co.,	do.	N. F. Sanford,	Mansfield, Allegheny county.
Beedle,	Beedle Bros.,	Allegheny,	— Beedle,	do. do.
Clark,	Clarke, Linn & Co.,	do.	L. B. Clarke,	Beechnut.
Federal Spring,	W. J. Steen,	do.	W. J. Steen,	Ramsey.
Keightly,	Fountain Hill Mining Company,	do.	Frederick Keightley,	do.
Tom's Run,	Harper, Speese & Co.,	do.	John D. Harper,	do.
Smith,	Smith & Co.,	do.	E. W. Powers,	do.
Pioneer,	Haselton, Jacobs & Co.,	do.	J. T. Head,	do.
Waynesburg, Shaft,	Sadler, King & King,	Greene,	B. F. Sadler,	Waynesburg, Greene county.
Sliding Rock,	J. W. Wilson,	do.	do.	do. do.
Montours,	Imperial Coal Company,	Allegheny,	J. W. Brown,	Montour, Allegheny county.
Beech Cliff,	do. do.	do.	do.	do. do.

TABLE II.—*Showing number of pumps, stationary engines, locomotives, miners, day men, mules, days worked, and the product (in tons) of each mine in the district for the year ending October 31, 1884.*

NAME OF COLLIERY.	Number of pumps.	Stationary engines.	Locomotives.	Miners.	Number of days worked.	Day men.	Mules.	Coal production, in tons.
Mines on the Monongahela river in Pool No. 5:								
Black Hawk,	..	...	...	16	.....	2	2	3,200
Pool No. 4:								
Knob,	1	1	...	70	152	7	..	30,000
Greenfield,	.	.	...	35	300	3	3	23,653
Globe.								
Eclipse,	..	.	...	130	270	6	....	57,779
Caledonia,	...	...	...	100	..	13	...	36,000
Champion,	.	...	...	50	200	3	4	20,000
Wood's Run,	..	..	...	50	180	4	4	21,154
American,	...	.	...	60	123	5	6	25 950
Peacock.								
Clipper,	..	...	..	55	165	5	4	31,671
Rostraver.								
Pool No. 3:								
Iron City,	2							
Columbia,	.	...	.	75	117	6	6	22,253
Webster.								
Gilmore,	..	..	.	100	118	6	8	32,011
Stockdale,	.	.	.	60	90	6	5	885
Milesville,	...	.	..	120	64	7	6	18,811
Rankin,	..	...		75	150	5	3	14 423
Robinson,	...	.	...	35	.....	3	4	
Black Diamond.								
Ivii,		..	...	100	120	8	6	3,230
New Catsburg,	.	1	.	140	177	10	8	49.350
New Eagle,	.	1	.	65	84	3	4	11,562
Old Eagle,	.	1	1	70	200	8	6	50 000
Courtney,		1	..	70	240	8	6	40.200
Garfield,	1		.	40	200	4	7	23,611
Buffalo,	.	1	.	85	250	12	8	62,100
Cincinnati,	...	.		40	150	4	5	20.549
New Coal Bluff,	...		...	100	200	6	14	26 000
Cliff,	..	1	.	80	75	10	4	18 000
Banner, Nos. 1 and 2,	.	..	..	100	153	8	6	34,700
Wenona,	..		.	28	100	3	4	7.585
Hilldale,	..	1	.	130	110	12	5	36,000
Pool No. 2:								
Upper Walton,	.	1	1	149	190	30	16	126 235
Jones,	...			85	66	15	8	20,296
Harvey O'Neil,	..	1		40	..	8	2	11.540
Lower Walton,	..		1	185	180	30	10	107 262
West Elizabeth,	..	..		100	21	10	22	6,300
Horner & Roberts',	3	1	1	250	100	15	11	51 540
Lovedale,	1	1	1	160	67	15	12	20 259
Bellevue,	..	..	.	140	100	27	13	44 444
Robbins',		..		150	100	12	5	40,000
Blackburn,	1	1		170	106	30	10	39 900
Pine Run, Nos. 1 and 2,	..	.	1	262	130	18	13	39,000
Rock Run,	..	.	.	105	120	15	7	34.340
Allequippa,	.		..	166	103	17	15	61,796
Camden,	...	2	..	200	155	35	18	250.000
Amity,	..	..		170	130	30	16	64,743
Stone's.	.	.	1	175	97	20	10	30,506
Pool No. 1:								
Green Springs,	...	.	..	120	110	23	9	46,540
Bellewood,		.	1	140	100	22	7	40.000
Hays Street's Run,	1		3	405	152	27	28	111,000
Risher's,	...	1	1	138	87	17	15	32.055
Walton,	...	1	..	198	115	8	11	55,473
Beck's Run,	...	...	...	199	150	29	15	69.230
Jones & Laughlin,	...		4	110	308	40	15	96,603
Ormsby,	2	2	2	360	290	90	30	135,417
Bausman,								
Castle Shannon,	...	...	...	138	300	20	12	77,373
Mines on Little Saw-Mill Run:								
Fox,	...	..	...	45	300	2	4	18.151
Chess,	4	4	...	80	249	34	7	60 365
Eclipse,	...	...	...	120	221	5	10	66,650

TABLE II.—*Continued.*

NAME OF COLLIERY.	Number of pumps.	Stationary engines.	Locomotives.	Miners.	Number of days worked.	Day men.	Mules.	Coal production, in tons.
Mines on Little Saw-Mill Run—Continued.								
Coal Ridge,	1	1	..	36	34	6	3	2,030
Venture,		3		125	230	10	12	71 450
Enterprise,	1	2	1	185	205	13	8	127,000
Peters' Creek Mines:								
Peters' Creek, No. 1.								
Do. No. 2.								
Legler's,	.	.	...	79	250	8	3	3,600
Lockhart,	.	.	.	10	..	4	1	
Venetia,	...	.	.	25	275	2	2	27,440
Youghiogheny River:								
Penny,		..		140	130	14	12	45,600
James O'Neil,	1		1	100	.	17	10	50,770
Cornell & Werling,	.	2	..	220	171	35	10	77,000
Eagle Nest.								
Buena Vista,	...	..	.	95	125	10	6	25,000
Ocean, Nos. 1 and 2,	...	.	.	208		25	9	26 000
Blythe,			.	100	225	8	5	30,000
West Newton Shaft,	1	1	.	112	275	7	6	75,000
Port Royal.								
Mines on the P. and St. L. R. R.:								
Keystone.								
Walnut Hill.								
Midway,		1	.	80	201	20	8	41 713
Primrose,	1	1	.	125	250	8	6	55,673
Jumbo,	..	1	.	100	140	8	6	40.129
Willow Grove,	..	.	..	150	250	10	8	76 600
Star,	.	.		30	175	6	3	20,000
Brier Hill,				125	.	10	9	
Laurel Hill,	1	4	1	300	310	40	20	150.000
Cherry,	.	.	.	33	219	9	5	21.874
Ewing,	..		..	30	180	5	3	21,000
National,	...	1	.	75	175	6	13	37,601
Oak Ridge,	...	.	.	78	220	13	7	44.600
McConnell,	...	..	.	65	240	6	5	27.900
Fort Pitt,	..	.	.	90	280	25	9	58.000
Camp Hill,	..	.	...	45	200	7	2	26.000
Grant,	..	...	.	130	159	8	12	39,800
Mansfield, Nos. 1 and 3.								
Idlewood,	..	...	..	35	240	7	3	24.000
Chartiers Valley R. R.,	..		.	50	250	8	4	33 652
Glendale,	.	...	...	30	200	4	3	20,000
Mansfield, No. 2,	.	2	..	450	185	20	14	200 000
Bowden,	.	.	.	85	270	7	5	27.384
Glass-House,	...	...	...	15	50	2	1	2,250
Summer Hill,	....	..	.	110	300	5	6	46.465
Bower Hill,	...	1	.	110	220	12	7	48,000
Bridgeville.								
Hastings',	...	1	...	65	215	10	5	43.000
Cook's,	...	...	.	27	238	2	3	12,083
Shupe & Co.,	1	1	.	50	250	10	4	20.000
Allison's,		..	.	20	150	4	4	12,000
Harding Shaft,	1	1	...	20	125	4	2	10,000
Painter's Run:								
Essen,	..	1	...	100	182	5	5	15.891
Beedle,	..	1	.	15	100	3	1	3 000
Tom's Run:								
Clark,	..	1	...	10	100	2	1	3 000
Federal Spring,	..	1	...	42	50	8	3	5,000
Keightly.								
Tom's Run,	...	1	...	40	....	5	2	16,845
Smith,	.	1	...	28	75	5	1	6.000
Pioneer,	..	1	..	25	50	6	1	3,750
Greene County:								
Wayneshurg Shaft,	1	2	.	8	300	1	....	4 800
Sliding Rock,	...	...	...	19	...	1	...	7,500
Montours Run:								
Montours,	..	1	..	80	110	10	6	26 000
Beech Cliff,	.		...	70	110	10	6	20,000
Total,	25	56	21	11,016	.....	1,312	779	4 349 165

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the First Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Anderson,	Natural.							
American,	Furnace,		36 x 5			6		
Amity,	Furnace,		24			5	56	56
Abe Hays,	Furnace,		18 x 6½			5	28½	
Allequippa,	Furnace,		8 x 5½			5	48	48
Allison,	Natural,						42	
Atlantic.								
Black Diamond,	Furnace,		34 x 6½			5	36	36
Banner,	Furnace,		7 x 7 x 22			12	40	36
Beech Cliff,	Furnace,		24 x 7 x 5				42	36
Bellewood,	Natural,					6	49	56
Caledonia.								
Camden.	Furnace,		8½ x 24			11	40	40
Castle Shannon,	Furnace,					5	35	35
Cliff,	Furnace,		9 x 4⅙ x 5			14	27½	
Clipper,	Furnace,		8 x 15			3	64	49
Coal Bluff,	Furnace,		6½ x 8			6	30	36
Courtney,	Furnace,		24 x 7			6	42	42
Cornell & Werling,	Furnace,		30 x 6½			12	44	42½
Enterprise,	Fan,	16				9	45	45
Enterprise,	Natural,					4	35	35
Garfield,	Furnace,					15	48	48
Glendale,	Furnace.							
Green Springs,	Natural,						42	42
Ivil,	Furnace,					5	56	42
Jefferson,	Fan,					6	48	36
Knob,	Furnace,		6 x 4				35	35
Lower Road,	Natural,					4		
Midway,	Furnace,		6 x 4			2	36	36
Montours,	Furnace,						49	36
National,	Steam exhaust.					3	35	36
Ocean,	Furnace.							
Oak Ridge,	Furnace,		6 x 28			7	48	49
Old Eagle,	Furnace.							
Pine Run,	Furnace,		6 x 20					
Phœnix,	Furnace,		8 x 4⅓ x 4			3	48	48
Primrose,	Furnace,		3 x 6			5	48	36
Rock Run,	Natural,					4	35	30
Streets Run,	Natural,		16 x 20			4	35	64
Summer Hill,	Steam exhaust,						42	36
Upper Road,	Natural,					6		
Woods Run,	Furnace,		5 x 6			6	42	30
West Newton,	Furnace.							
Willow Grove,	Furnace.							

TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the First Bituminous Mine District, for the year ending October 31, 1884.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allequippa,	370	17,870	. . .	. .	370	17,870												
Amity,	410	20,280	380	21,760	320	17,620												
Catsburg,	220	10 560	500	27.000	600	27,000												
Coal Bluff,	250	9,000	120	4 200	450	13 500												
Courtney,							. .				. .	. . . .	185	7,000			185	7,000
Enterprise, H. and M.,	375	20,250	330	14,850	420	21,000	440	23,760	375	16,875	500	25,000	400	21,600	375	16,875	510	25,500
Horner & Roberts',											290	15,660						
Iron City,							125	7,335			160	8,775						
Jefferson,	.	6,760	. .	. .	. .	14 991	120	6 360	80	2,720	480	15,840						
Knob,	.		.		. .			10,000			.	11 000						
National,								7,700				11,375	300	9,000			400	12 000
Oak Ridge,	210	8,400	80	2,800	430	17,200	110	5 280	185	6,475	303	12 120	180	8,640	240	9,600	180	8,640
Pine Run,							. .	6,785	.	. . .	.	20,000						
Primrose,	350	14,000	100	4,000	325	13,100												
Robbins,			. . .	. . . .			.	. . .	. .	. . . .	. . .	. . .	200	8,000	125	4,500	375	15,100
Streets Run,	. .	11,230	. .	. .	.	12,136												
Summer Hill,	. . .	. . .		. .	. .		.	. . .	. . .	. . . .	. . .	. . . .	.	.	. .	. .	. .	14,600

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Amity,	. . .	. . .	390	18,720	450	21,600	390	17 520	260	13,200	390	16, 380	310	17,360	250	9,000	410	18.040
Birmingham,	.	.											200	18,500		. . . .	500	18,600
Castle Shannon,	100	4,200	. .		100	4,200					. .							
Coal Bluff,	. . .		.	. .			170	5,610	125	3,750	400	13 200	175	5,775	104	3,465	425	12 750
Cornell & Worling,	. . .		.				320	16 140										
Courtney,	182	7.000			182	7,000	183	7,000		.	183	7.000	182	7,000				
Enterprise, H. and M.,	400	21,600	300	13,500	500	25,000	460	24 840	375	15,875	450	22 500	410	22,140	375	16,875	800	26,400
Enterprise, V. H.,	. . .			.		. .	500	10 000	480	9 600	530	10 200						
Glendale,	. . .			. .		. . . .	200	10,000	125	6 250	250	12,500						
Gilmore,	. . .		. .	. . .		. . . .			150	3,750	500	24,000						
Harding.	500	10,000	.	. .	100	6,500												
Horner & Roberts,			.	. . .	500	25,000	.	. . .	. .	. . .	485	23 620	380	18.240	.	. . . .	340	13,920
Jefferson,	. . .		.	. .				.	. .	. . .			400	21,200	. .	. . . .	. . .	21,670
Knob,	. . .	11 350	.	. . .	.	10,823												
Lovedale,	. .		.	. .	. . .		370	14 800	. . .	. . . .	265	11,660	120	5,040	110	3 850	280	10. 200
Milesville,				. . .					. .	. . . .	. .	.	165	6,000		. . . .	330	13,200
National,	120	4 200	.	. .	450	15 750	. .	. .	. .	. .	. .	. .	200	7,000	70	2,450	340	13,600
Nixon,	250	12.000	. .	. . . .	300	15.150												
Oak Ridge,	136	5,440		. . .	353	14,120	.	. .	190	9,120	373	14 920	160	6,400	.	. . .	290	11.600
Ocean,	. .	. .				. .		. .		. .	. .		. .	. .	.	. .	. .	25,000
Phœnix,	. . .	. . . .	18¾	1,304														
Robbins Block,	. . .	. . . .	. .	. . . .	.	. . .	280	12 000	. .	. . .	. . .	15,000						
Streets Run,	. . .	. . . .	. . .	. . . .	. . .	. . . .	340	14,025	. .	. . .	. . .	14,437	190	13,290	. .	.	380	15,580

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Atlantic,													120	4,800				
Birmingham,																	500	17,500
Courtney,	182	7,000			182	7 000	182	7 000			182	7.000	182	7.000			320	12,800
Enterprise,	530	26,500	400	18,000	750	24,950	470	28,700	400	18,000	800	26 400	440	26 400	380	17 100	810	20,730
Eclipse,								10,000				10.000						
Garfield,								4.000				4.000						
Greenfield,							290	12 080			300	13,100						
Grant,						17,800		10,000				25,000						12,000
Ocean, No. 1,								11.000				11.300						
Ocean, No. 2,								19,000				19,100		22 800				23,000
Oak Ridge,	87	3 480	220	7,700	323	12 920							185	6 600	135	4,800	380	15 200
Lovedale,		4,500				6 820												

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Atlantic,	182	9.100	. .	. . .	300	15, 000												
Black Diamond,			.	.			300	12, 000	250	10, 000	350	14 000						
Courtney,	180	9 000	. . .	. .		9 000	182	7.000	. .		182	7, 000	180	7 000		.	182	7, 000
Castle Shannon,			. .	.	.		100	4 200		.	100	4.200						
Coal Bluff,													130	5, 387	110	4, 840	500	21. 000
Enterprise,	460	27, 600	380	17, 110	820	27, 000	470	28, 200	370	16 650	850	28, 000	470	28 200	375	16, 895	855	28 215
Eclipse,																		9. 000
Garfield,				.	.	.	300	12, 600										
Greenfield,				. . .			.			.	.	. . .		. . . .	. . .	. . .	200	10, 000
Midway,	200	8 000		.	.	8, 000												
National,													105	3, 675	.	.	1 5	6 475
Oak Ridge,	180	7 200	210	7 350	380	15 210	110	4, 400	220	7, 700	360	14, 400						
Old Eagle,	310	12 090	265	10 336	500	20 000		.					210	8, 170	300	11, 700	470	18 800
Ocean, No. 2,		13 500				13 580												
Ocean, No. 3,	.	25, 000	.	.	. .	25, 000												
Ocean Mine,	.			. .		. .	.	. .	.	. . .	. .	. . .	. .	23. 000	. .	. . .	. .	23, 000
Ormsby,						. .	.	. .	.	. . .	. .	.	.	18, 000	. .	. .	.	18 000
Port Royal,	300	16, 800	200	9, 000	200	11, 900												
Robbin's Block,							230	12. 000	113	5 000	420	17, 000						
West Newton,	266	11, 700	190	7, 980	390	15, 600	260	11, 700	200	8, 400	390	15, 600	270	12 950	200	8, 400	420	8 000
Willow Grove,	. . .		. .	. . .	. . .	. .	. . .	. . . .	. .	. . . .	. . .	. . .	200	9, 600	150	5, 775	275	13, 200

LIST OF ACCIDENTS *occurring in the mines of the First Bituminous Coal District of Pennsylvania, for the year ended October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
Nov. 23	Joseph Craig,	..	Married,	..				Hurt by fall of slate in Anderson mine. D. Anderson, operator.
23	Fred. Bell,	.	Married,	..				Hand hurt slightly in Catsburg mine. Louis Stalb, operator.
23	William Laws,	14	Single,	..				Leg sprained in Cornell & Worling's mine. H. Brum & Sons, operators.
23	Thomas Kersop,	..	Married,	..				Leg broken by wagon in Enterprise mine. Hartley & Marshall, operators.
23	Thomas Critchley,	..	Married,	..				Injured by dilly engine's trip, Enterprise mine. Hartley & Marshall, operators.
26	Augnst Baum,	..	Married,	..				Lost two fingers on right hand in Glendale mines. Gregg Brothers, operators.
Dec. 27	James Massey,	35		..				Burnt by fire-damp on face and right arm in Enterprise mine. Hartley & Marshall, operators.
Jan. 31	Jacob Smith,	45		..				Injured by fall of slate in J. C. Risher & Co's mine.
Feb. 19	Philip Weaver,	22	Single,	..				Leg broken by fall of roof in Castle Shannon mines.
22	Muley Mullen,	38	Single,	..			Feb. 23	Killed by fall of slate in the Slope mines. J. Morgan, operator.
23	Robert Coehran,	16	Single,	..				Back broken by fall of slate in Summer Hill mines. F. Armstrong, operator.
Mar. —	Christ. Haidley,	48	Married,	..				Leg broken with slate in Cornell & Worling's mine.
—	Martin Coin,	48	Married,	..				Ankle broken by empty cars passing over it in Coal Bluff mines. Pittsburgh and Peters Creek Coal Company, operators.
20	William Kenoyon,	..	Married,	..				Leg broken by fall of slate in Horner & Roberts' mine.
10	George Britton,	40	Married,	..				Burnt by explosion in Montour mines. Imperial Coal Company, operators.
18	Edward Boyle,		Single,	..				Hurt by fall of slate in J. D. Risher's mines.
April 23	Clark Bowers,	18	Single,	..				Leg broken by cars in New Eagle mines. F. S. Hutchinson, operator.
5	William Robinson,	24	Married,	..				Leg crushed between two cars in Enterprise mines.
24	Patrick Sheeny,	38	Single,	..				Collar bone broken by fall of slate in Lower Road mines.
—	Thomas E. Williams,	40	Married,	..				Injured by fall of slate, Streets Run mine. J. D. Risher, operator.

	—	Andrew Utter,	17	Single,				Injured by cars in Keeling's mines. Birmingham Coal Company, operators.
	—	Henry Ormisher,						Leg broken by fall of slate in Cliff mines. Imperial Coal Company, operators.
May	2	Fred. Hess,	18	Single,				Fatally injured by fall of slate in the Lower Road mines. Walton & Co., operators.
	1	Robert Warren,		Single,				Arm broken in Cornell & Worling's mine.
	21	Jacob Percy,	40	Married,				Hand mashed by falling coal, Oak Ridge Coal Company's mine.
	10	John Bowers,	22	Single,				Slightly hurt by cars in New Eagle mines.
	—	William Hall,	20	Single,				Toe injured by cars in Youghiogheny Coal Company's mine.
	20	Elisha Ross,	20					Killed by fall of slate in Pine Run mines. J. D. Lynn & Son, operators.
June	10	J. Ritchard.	45	Single,				Hurt in the head in Oak Ridge mines.
	—	David Chester,	14	Single,				Slightly hurt by being caught by coal car at trap-door.
	—	Philip Flynn,	42	Married,				Killed by fall of slate in Grant mines. Grant Coal Company, operators.
July	1	William Martin,	50	Married,				Killed by fall from off horse in Birmingham mines.
	—	Luke Flood,						Hip dislocated in Grant mine.
Aug.	2	Jeremiah Holland,	18	Single.				Killed by falling slate in Ocean mines.
	—	Antonia Barr,	47	Married,				Killed by fall of coal in Midway mines.
	—	John Bardo,	55	Married,				Injured by falling slate in Oak Ridge mines.
	—	Valentine Lorenze,	14	Single,				Injured by fall from horse in Oak Ridge mines.
	—	L. B. Frank,	54	Married,				Injured by fall of coal in Oak Ridge mines.
Sept.	3	Fortunati Carozzarlie,	20	Single,				Leg broken in Robbin's Block Mine.
	15	Honori Solmont,	28					Hip dislocated in Robbin's mine.
	9	Frank Bailey,	15	Single,				Face bruised by blast in Bower Hill mine.
	26	George Gibbons,	20					Hurt slightly by falling of slate in Courtney mines.
Oct.	3	Charles Johnson,		Single,				Fatally injured by mine cars in Willow Grove mine.
	27	Charles Fields,	29	Married,				Killed by fall of coal in Eclipse mine.
	22	John Smith,	13	Single,				Leg broken by dilly-rope in Enterprise mine.
	17	George Taylor,	29	Single,				Finger crushed in Enterprise mine,
	17	John Thompson,	60	Married,				Foot cut with slate in Enterprise mine.

SECOND DISTRICT.

To the Honorable J. SIMPSON AFRICA, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

SIR: I have the honor herewith of submitting to you my annual report as inspector of mines for the Second Bituminous Coal District of Pennsylvania, for the year ending October 31, 1884. The report includes two months (November and December) of the year 1883, and is the eighth annual report of this district since the office of mine inspectors of the bituminous coal fields of Pennsylvania has been established. The present report contains, in tabulated form, the names and locations of the several mines in the district, the names of companies and parties operating the same; also, the name and post-office address of the superintendent of each mine; the method used to ventilate the mines; and the size of inlets and outlets, with the amount of air in circulation and discharged from the respective mines. You will also find a list of accidents as reported during the year, with remarks explaining the manner and under what circumstances those proving *fatal* occurred, which information was obtained by personal examination of the place of accident, and from the testimony of those present at the time it happened.

The number of accidents reported during the year, including both fatal and non-fatal, compared with those reported in the last report, from the 1st of January to the 1st of November, 1883, shows a decrease in number for the year 1884. Total number reported in 1884, forty-eight (48.) Of these thirteen (13) were fatal, or proving fatal, and 35 were non-fatal.

Of the fatal accidents, 2 were caused by fall of roof; 7 by fall of slate; 2 by pit-wagons; 1 by boiler explosion, and one by being caught under a piece of timber falling from a derrick near the head of a shaft.

Total number of mines in the district,	85
Estimated output of coal mined from the 1st of November, 1883, to the 31st of October, 1884, inclusive, . .	4,494,600 tons.
Number of persons employed inside, ...	6,771
Number of persons employed outside, ...	1,789
Total number of persons employed, ...	8,560
Total number of tons mined for each fatal accident, . . .	$345,892\frac{4}{13}$
Total number of tons mined for each casualty, ...	$93,637\frac{1}{2}$

As the output of coal is not reported by all the mines, the above figures are only approximated amounts based on the reports received.

Of the mines reported, the figures show that the largest output of any one mine for last year was 204,676 tons. Number of days worked, 266.

In looking over the products of the other mines, (reported,) they are found to be from 176,000 tons down to less than 15,000 tons for the year. There are thirteen (13) mines reported whose output of coal is above 100,000 tons each. The balance are from that amount down to the amount named. The highest number of days worked at any mine (reported) was 320. The lowest number reported was 150.

There is hardly any mine in the district that has been worked to its full capacity this year. Most of the mines have been on part time, and even then not to their full capacity.

Hoping that the next year's report will show business at the mines in better condition,

I remain,

Yours very respectfully,

J. J. DAVIS.

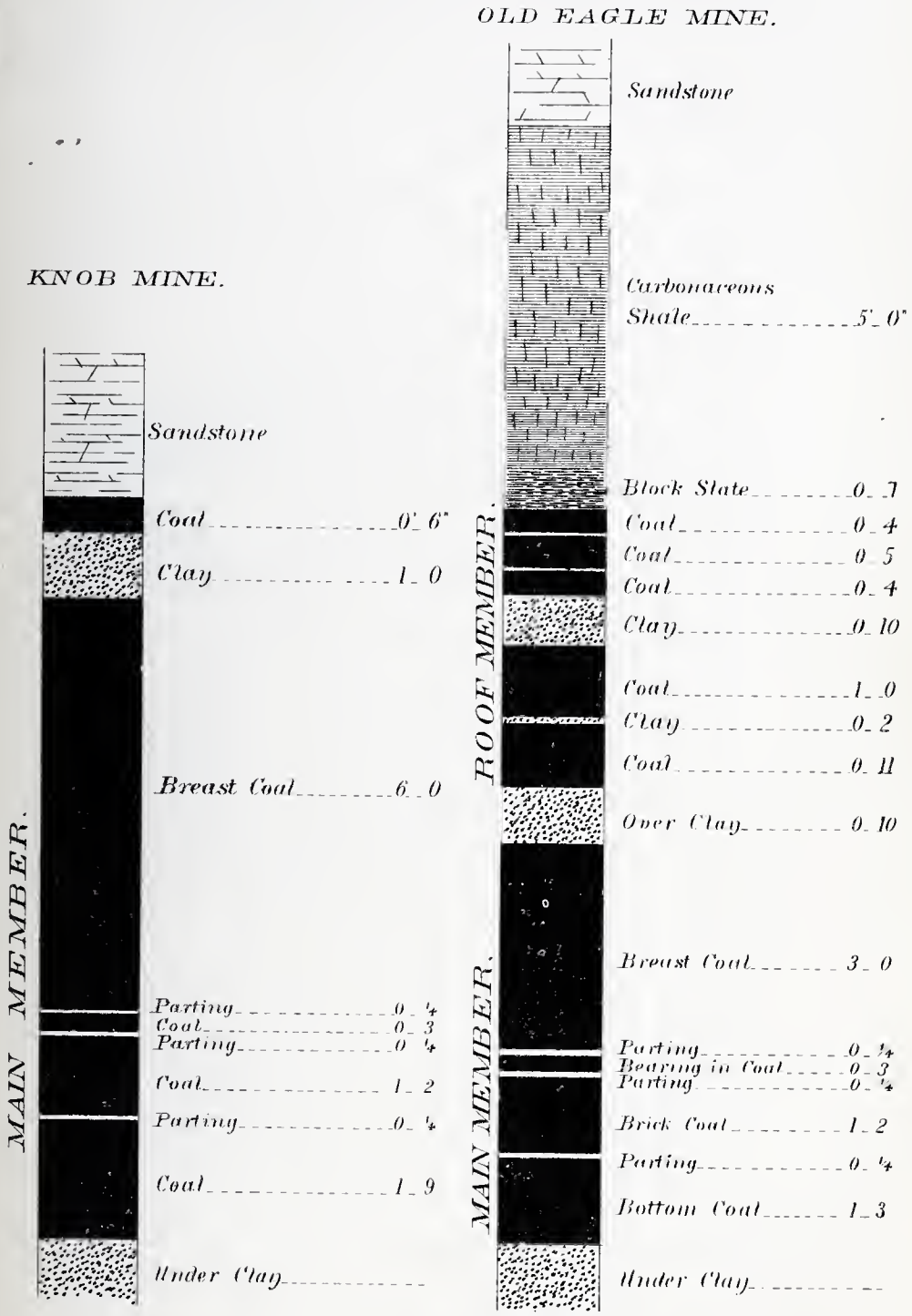
PITTSBURGH, *December 2, 1883.*

SEAMS OF COAL WORKED AND MINE ACCIDENTS.

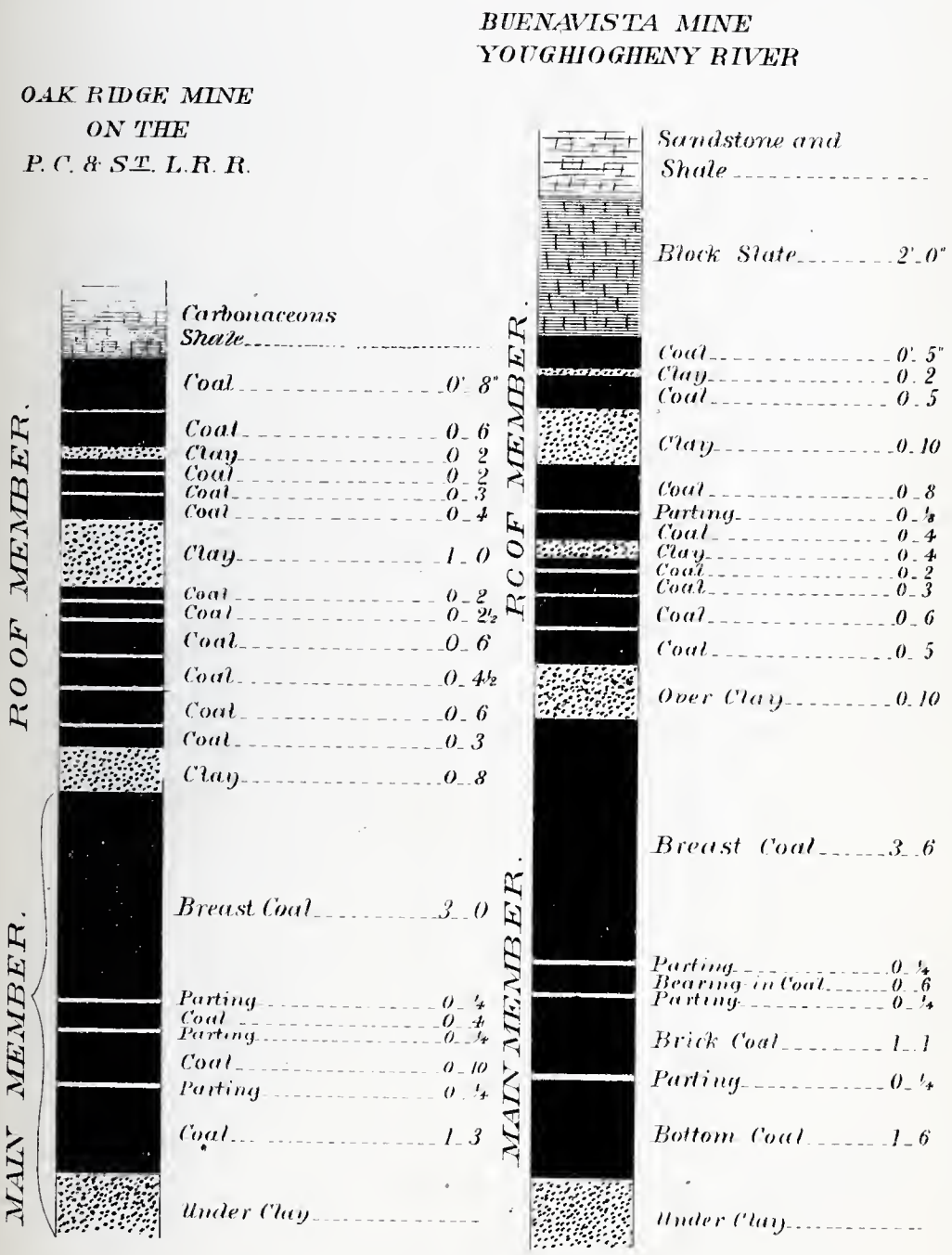
There are nine mines in this district worked in the "Freeport Coal Seams," seven of which are located on the West Penn railroad and two on the Allegheny Valley railroad, all in Westmoreland county. All the mines in the district, except these nine, are working in the Pittsburgh coal seam. The majority of the accidents are caused by a fall of slate in this seam. This slate, in some of the mines, is on top of the workable coal, and is named in the Second Geological Survey, Vol. KK, "main clay parting." In mining the coal, the slate is left up until there is sufficient amount of coal worked from under to give it room to fall. In some cases, after the coal is mined and loaded out, the slate still remains in place quite solid for a considerable time, and when it is necessary to get it down immediately after the coal is taken from under, the miner will have to resort to the use of powder to blow it down. In other parts, probably of the same mine, the slate is of different nature; it will come down with the coal, and will not remain up to get the coal from under. The miner is always anxious to leave the slate up till he gets his coal down and loaded from under it, and in order to enable him to do this, he takes his posts and props it up. Sometimes, after propping the slate up for one cut, he thinks it safe to work under it to get another cut mined, and probably while he is working at this, and before getting the coal out, a part of the slate that was uncovered will fall and the miner is caught under.

A miner working in this coal, where he has to contend with the draw-slate, cannot be too careful; his safety depends, to a great extent, on how he exercises his judgment and on his knowledge of the nature and character of the slate. Temptations often interfere with his judgment. When

COLUMNAR SECTION OF PITTSBURGH COAL SEAM
OF THE
MONONGAHELA RIVER.



COLUMNAR SECTIONS OF PITTSBURGH COAL SEAM.



COLUMNAR SECTIONS.

PITTSBURGH COAL SEAM
ENTERPRISE MINE
—— ON ——
LITTLE SAW MILL RUN.

ROOF MEMBER.

MAIN MEMBER.

Carb Shale	
Block Slate	0 — 6
Carb Shale	1 — 0
Coal	2 — 0
Parting	0 — ⅓
Coal	0 — 2
Clay	0 — 6
Coal	0 — 11
Coal	0 — 5
Coal	0 — 2
Coal	0 — 2
Clay	0 — 10
Coal	3 — 3
Parting	0 — ¼
Coal	0 — 3
Parting	0 — ¼
Coal	0 — 11
Parting	0 — ¼
Coal	1 — 4
Clay	

WAYNESBURG COAL SEAM
WAYNESBURG SHAFT.

Sandstone and Shale	
Coal	1 — 0
Coal	0 — 3
Clay	1 — 0
Coal	2 — 4
Coal	0 — 5
Coal	0 — 4
Coal	0 — 1½
Clay	

SCALE OF 3 FT per INCH.

in the act of examining the slate, he thinks, in himself, if he allows it to remain up, he can dig a car more coal that day and that he can do his work easier; that he can save both labor and time by not meddling with the slate. He is confident that the slate is strong, and that it would require much labor to get it down. He concludes to finish his day's work without meddling with it, and to take his props from under it after his day's labor is done, before he leaves for home. He thinks the slate will fall of itself before morning. In this way he decides to continue his labor at the coal, and, probably, before he strikes many blows a part of it is down and him under. On examining the place after the accident, we find that there was a "water-slip," a break, or a weak place that was concealed until after the fall.

The roof above this slate is generally of safe character and only requires ordinary care in room workings, except where it is traversed by "horse-backs" or some other interruptions in the measures; and it is only in rib drawing and pillar and stump workings where it requires, in point of safety, to use experienced and skilled labor to avoid danger from the upper roof.

The Pittsburgh Seam, in the coke region, has changed its character from that which is known as the hard coal regions of this seam. It is softer, and the workable breast is of greater thickness. A part of the coal is left to support the roof. The workings are generally safe in rooms. The rib and pillar workings require more careful mining in order to avoid the danger of being caught when a break in the roof takes place, and also, as a rule, if the mine generates any carbureted hydrogen gas, it will be found coming from the roof in this section. Mines where it was not known to exist before the roof commenced breaking, were troubled after, and, in some instances, made to suffer by severe explosions. The thickness of the coal in these mines is favorable to their proper ventilation. We cannot prevent the gas from generating, but we can prevent it from accumulating in the workings by having a vigorous ventilation to sweep it out as fast as it generates. Every mining boss should make it his duty to see that he provides the ventilation as the mine advances, and not wait until he is compelled to make provisions by a failure to work, or an accumulation of gas of sufficient quantity to cause a severe explosion. These provisions in time would be safeguards to the property of the owners, and would insure safety and security for the life and limb of those employed in the mine.

EXAMINATION OF MINES AND MINE IMPROVEMENTS.

Alpsville mine.

Operated by Thomas Hackett & Co. Located on the Baltimore and Ohio railroad, in Allegheny county.

The mine consists of drift openings in the Pittsburgh coal seam. From new opening, the coal is hauled to top of incline plane by stationary engine and wire ropes. The main rope five eighths inch diameter, and the tail-rope

one half inch. The gauge of track, four feet. The mine has not been in steady operation during the year.

At the time visited, March 26, air measurements taken gave a velocity of current in new main opening of 200 feet per minute. Size of opening, $8' \times 6\frac{1}{2}'$.

Osceola mine.

Drift openings operated by the Osceola Coal Company, and located on the Baltimore and Ohio railroad, in Allegheny county. Superintendent, J. H. Dewees. Air measurements taken in the third hill. Velocity, 240 feet per minute. Sectional area, $8' \times 5'$. General condition of the mine fair.

Blythe mine.

The Blythe or Yough Valley mine is located near Guffey station, on the Baltimore and Ohio railroad, in Westmoreland county. Operated by Y. & A., C. & C. Co. Superintendent, John Blythe. Mining-boss, William Welsh. The general condition of the inside workings fair. Outlet velocity, near furnace, 410 feet per minute. Size of air passage, $7' \times 6'$, where air measurements were taken.

Shaner & Armstrong mines.

Operated by B. F. Rafferty & Co. Located in Westmoreland county, on Baltimore and Ohio railroad. Superintendent, Alexander Moreland. These two mines are connected, and are ventilated by a furnace in the Armstrong mine. They employ about 200 persons.

Ocean mine.

Located at Scott Haven, on the Baltimore and Ohio railroad, in Westmoreland county. Operated by the Youghiogheny River Coal Company. Superintendent, J. F. Hosack. Mining-boss, George J. Jewell. This mine is extensive, employing over 250 persons. Was visited three times during the year. The ventilation is produced by furnace. Air measurements taken in break-through between old Nos. 7 and 8 parallel, velocity, 80 feet per minute. Sectional area, $6' \times 7'$. Intake No. 1, for old part of workings, velocity of air, 150 feet per minute. Sectional area, $7' \times 9'$. Return air current, measured between Nos. 4 and 5, on No. 1 face-entry, velocity, 150 feet. Sectional area, $6' \times 9'$. Return air current, measured on face entry between 4 and 5 butt; velocity, 100. Sectional area, $6' \times 9'$. Intake No. 2, for tunnel side of workings, velocity, 180. Sectional area, $9' \times 6'$. Outlet current, near furnace, velocity, 170. Sectional area, $13' \times 8'$.

Amieville mine.

Operated by N. J. Bigley. Located near Suterville, on the Baltimore and Ohio railroad. This mine has seven openings, two of which are air-shafts. There are two face entries about 200 yards apart. The butt entries are driven at right angles with these. The air is in two splits. The October

report from this mine stated that it had been almost idle the past three months.

Penn Gas, No. 4, mine.

Owned and operated by the Penn Gas Coal Company. Superintendent, J. F. Wolf. Located on Youghiogheny railroad, near Sewickley.

The new system of working in this mine, reported in last year's report, is still continued with satisfactory results.

The ventilation produced by furnace.

There are four openings to this mine, and a large volume of air passing through it.

Yough Slope.

This is a slope opening, operated by B. F. Rafferty & Co. It is ventilated by furnace, which gives good results.

West Newton mine.

This is a shaft, located on the Baltimore and Ohio railroad, the underground workings of which are extended to the other side of the Youghiogheny river, and connected with another shaft sunk on that side, doubling their facilities for shipment. The ventilation is produced by furnace, and the mine in fair condition.

Port Royal mine.

This is a shaft opening, operated by the Port Royal Coal Company. This company operates on both sides of the Youghiogheny river, and their workings on each side are connected by a passage-way driven under the river. Their operations in this district, for the last year, have been limited.

Smithton mines.

These mines consist of drift openings, and are extensive mines, but have not been operated only to a limited extent this year. They are located near Smithton station, on the Baltimore and Ohio railroad.

Eureka mines.

Operated by Fox, Kifer & Co. A drift opening, located on the Baltimore and Ohio railroad. Before my visit to this mine of February 27, there had been a large fall of roof, which happened between Saturday evening and Monday morning, when the mine was idle. The effects of the fall, as seen on Monday morning, were similar to those seen in a mine after the explosion of "fire-damp." Doors and brattices had been shattered and torn to pieces, &c. The fall was in No. 5 entry, across rooms Nos. 2, 3, and 4. The ribs of these rooms had been drawn. The fall was about 310 feet in length and 110 feet in width. A door in No. 3 entry, which was 768 feet from foot of No. 5 entry, and a door in No. 4 entry, 415 feet from the same place, were torn; also in an opposite direction from the above a

stoping at head of main entry, in a hole cut through into the Smithton mines, and four other stoppings in air-courses, were destroyed. I was glad that this did not happen when the mine was running.

Hampton mine.

Drift opening, operated by the Hampton Coal Company. Superintendent, Major Lawton. Mine located near Wilkinsburg, in Allegheny county; employing over 100 miners. The ventilation is produced by furnace, and during the year much improvement has been made in the drainage of the mine.

New York Gas Coal Company mines.

The mines of this company have not been running to their full capacity this year. The Duquesne mine has been idle. The Oak Hill mines at Turtle creek; the No. 3 was stopped in spring. No. 4 mine has been running, employing a large number of miners, but not up to its full capacity, and the same may be said of Sandy Creek and Plum Creek mines. With a fair demand the mines of this company have always been in condition to supply a large quantity of coal. The seam of coal in all these mines is above water-level, which made them easily opened, and the coal brought out without the aid of hoisting machinery to bring it to the surface. They have also an advantage in their drainage over those where it requires large and powerful steam pumps to keep them in working condition, &c.

Penn Gas Coal Company mines.

This company has been operating four of their mines this year—their Nos. 1 and 2 shafts, and their Coal Run and No. 4 mines, which are drift openings. At No. 1 shaft, the ventilation has been improved by a change of fan. The present fan is differently constructed from the one in use before the change.

At No. 2 shaft, a new fan, 18 feet in diameter, has been erected to take the place of a 12-foot fan. The increased rubbing surface that the air had to contend with in its passage through the working places of the mine, and the large quantity of fire-damp (carbureted hydrogen gas) generated, required a larger fan.

At Coal Run mine, and also at No. 4 mine, the ventilation is produced by furnaces. The Coal Run furnace has a fire-bed of 48 square feet, and the No. 4 furnace 56 square feet.

The mines of this company are all worked on the double-entry system, and are in good condition. Both the ventilation and drainage of these mines are well taken care of, and the mine roads are well laid and kept in good order. Last spring the management of the mines was put under a severe test, by fire being discovered in the No. 2 shaft. This stopped the working of the mine. The fire was found to be within a short distance of the bottom of the shaft and heading toward the shaft. Both the shaft and the slope openings were closed and water turned in to flood it. The

water was allowed to run in at both the shaft and slope until it had raised to the height of over sixteen feet in the shaft. John F. Wolf, Esq., the present superintendent of the company, by the aid of levels that he had taken, was able to estimate the amount of water and to what portions of the workings it had reached. I made two visits to the mine during the fire and the flooding, and found that the plans adopted to put the fire out were strictly carried out, and the greatest caution exercised to prevent an explosion of gas, which had accumulated while the ventilation had been cut off in order to smother the fire and stop it from spreading, was successful. On the 19th of May, I received word from Mr. J. Frank Wolf that the shaft was in working order. He said: "We had a large amount of timbering and planking to do. The fire was much larger and more extensive than we thought at first, and we have come to the conclusion that it started in the fire-boss's shanty. We had 16 feet of water in the shaft, which covered all the fire. Any less would hardly have been enough. The fire burnt the timber in the main entries, letting down a large quantity of the roof. The highest place was 20 feet from the rail. 17 wagons were burnt. The steel rails were twisted in the hottest place."

On my visit to this mine after the fire, I found that the new timbers and the repairs at the bottom of the shaft had improved its condition.

WESTMORELAND COAL COMPANY'S MINES.

The mines of this company, in the Second district, are very extensive, employing a great number of men. During the last year, they have made some important changes and improvements, a description of which has been given to me by Mr. Brown, one of the engineers of the company, as follows:

These mines are located near Irwin station, Westmoreland county, Pennsylvania. F. Z. Schellenberg, superintendent.

Some changes and improvements, more or less important, have been made at all the mines owned by this company since your last report.

At *South Side mine*, a mine locomotive has been introduced to haul out the coal lying on both sides of the third-dip entry. The entry has been graded and is used as the locomotive road. The length of the road, from the pit mouth to the bottom of the entry, is 3,200 feet, the grade varying from .80 feet to 2.60 feet per 100. The schedule for running the locomotive is as follows: There are four stations, to which the gathering mules take the loaded wagons and where they get empty ones. Two of these stations are about the middle of the dip entry, and two are near the bottom of it. The locomotive gets its trip of twenty-four (24) wagons at two of these stations. Twelve wagons are first brought from one of the bottom stations and left on a side track at the head of the dip entry. The last twelve are obtained at one of the other two stations, and, hitching to those first brought up, the locomotive takes the twenty-four (24) to the tipple. The grade from the siding out is comparatively light. The preceding trip has been already unloaded, and the locomotive takes the empty

wagons to the other two stations, where loaded wagons are standing waiting, and the above proceedings are repeated.

A day's work for the locomotive consists in bringing out 325 loaded wagons of coal and delivering 50 wagons of slate.

This dip-work is ventilated by a 10-foot exhaust fan placed at the top of a shaft 70 feet deep, which is also used as a pump-shaft.

A roll was encountered in the face of the main entries a short time ago, which caused the coal to drop four feet, keeping its thickness and quality. The entries were driven ahead a few yards after meeting the roll, but the coal seemed to have adopted the same grade in its new level that it had before. The entries were stopped then, while the upper thirteen butts are being advanced to prove the direction and extent of the roll. A fault of this nature is rarely met with in this region.

Seven patent attachments have been put on ventilation doors in South Side mine, by means of which the driver opens the doors without stopping or leaving his trip.

Larimer mine.

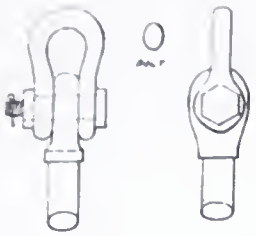
The coal in the Byerly entries at Larimer mine is being rapidly exhausted, and in a few months the Byerly plane will be done away with. The work will be more consolidated, and the Skelly plane only will be used. The coal lying to the west of the Skelly entries is being developed, and has proved to be of an excellent quality.

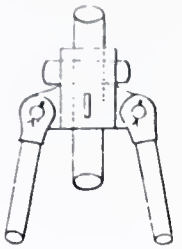
The location of the 10-foot fan and the Sherrill Roper hot-air engine, which runs the fan, will soon be changed. They will be used to ventilate the new workings, where an entry has been already driven to serve as an air-course.

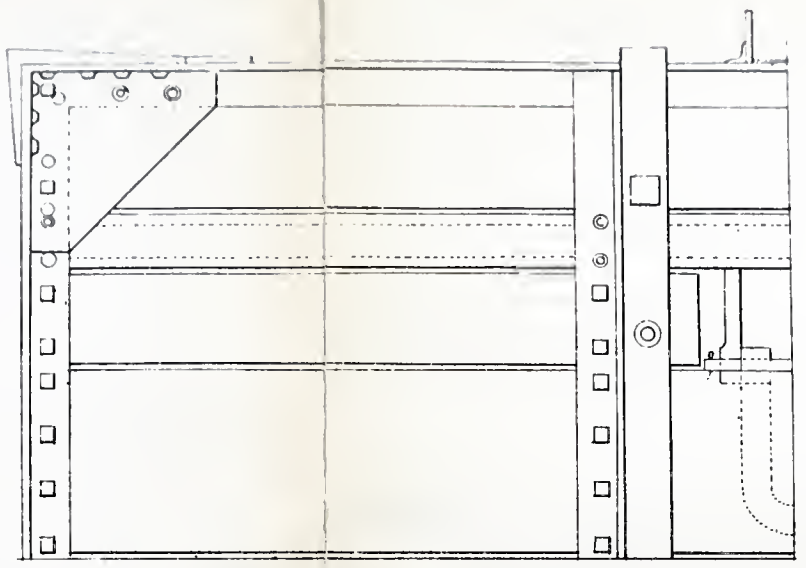
Westmoreland Shaft.

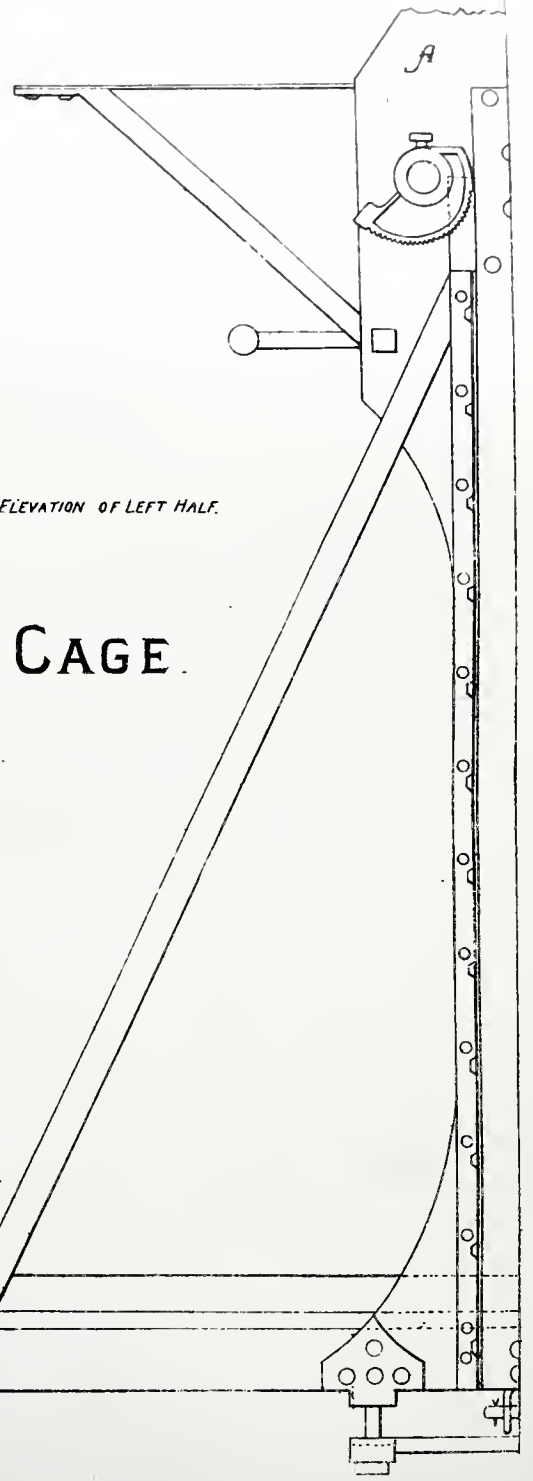
Some noticeable changes and additions have been made at this mine in the past year. Five more of the Harrison coal mining machines have been put in the mine, making 19 there now. The same air-compressor is used, but is run at a greater speed, and a higher pressure of air is obtained.

The dip-work at this shaft, for many years standing full of water, has been emptied of it by means of a syphon running to the sump. Outside the mine 4 new boilers are being placed in position, which will make 12 boilers in use at this colliery. These four are being set according to the Jarvis patent boiler setting, and it is the intention to burn slack under them. The new cages at Westmoreland shaft, the subject of the drawing accompanying your report, have been put in place inside of the last six months. These cages were built at the company's shops. They are made of wrought-iron principally, and all the material in them is of the best quality. They weigh 2,200 pounds each. The weight of the mine wagons filled with coal is about 4,000 pounds. The arrangement for keeping the wagons in place on the cage while hoisting is automatic and is very simple and positive in its action. Two pieces of heavy, square iron, shaped some-

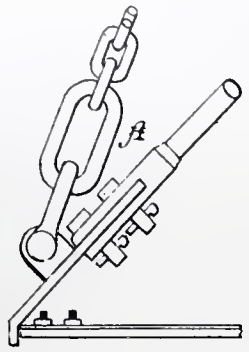


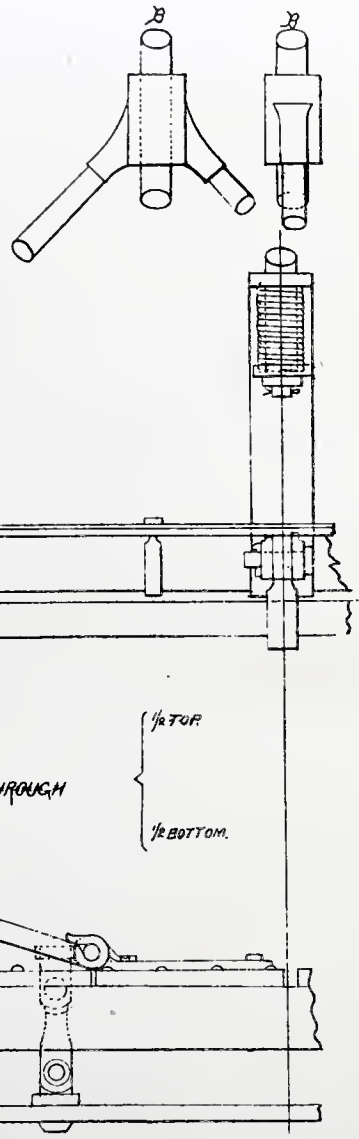




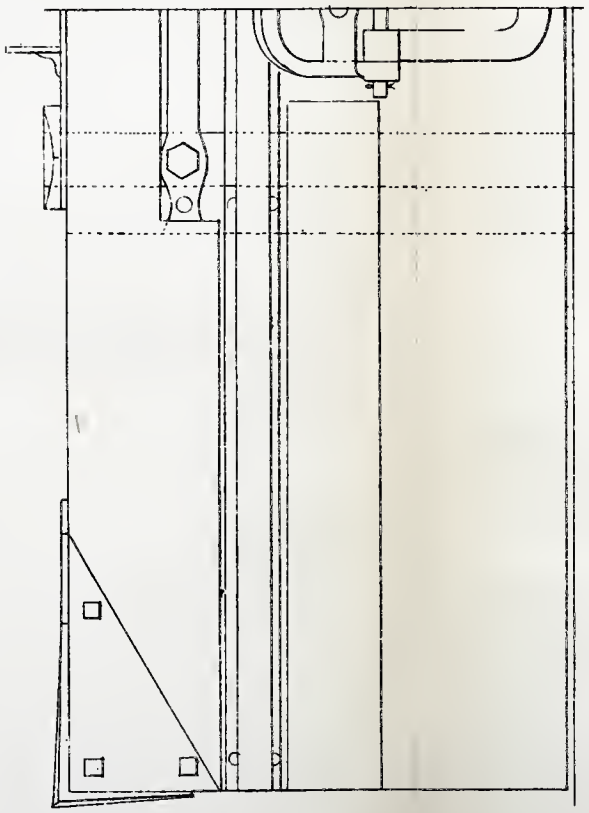


ELEVATION OF LEFT HALF.

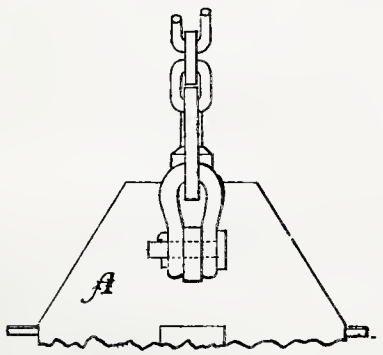


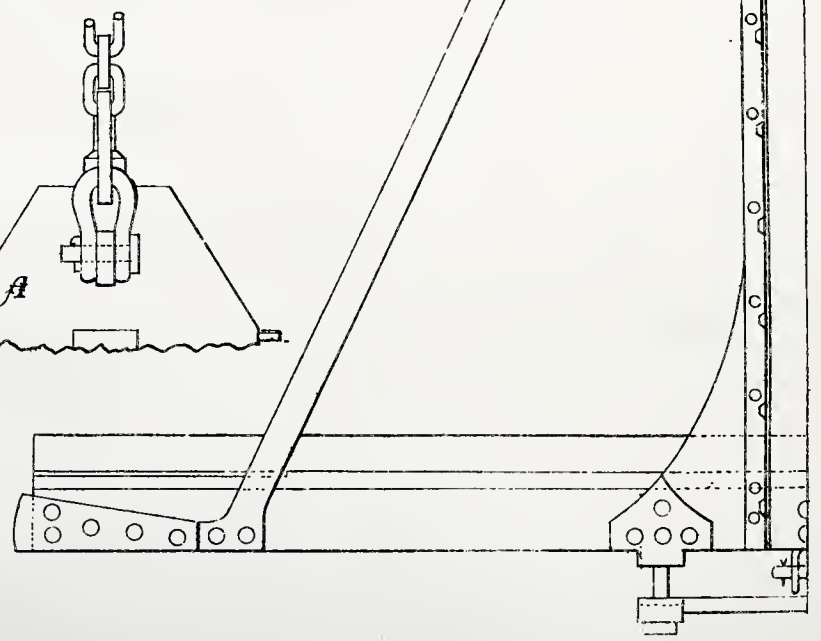


¼ PLATFORM { SEEN FROM BELOW. / SEEN FROM ABOVE.



DETAILS OF CAGE.





C. ROWY 1884

TABLE *Giving part of Pieces, with their Sizes, of one of the new Cages at Westmoreland Coal Company's Shaft No. 1.*

NAME OF PIECE.	Material.	SIZE.			
		Length.	Breadth.	Thickness.	Diameter.
Cover,	Wrought-iron,	5′ 3″	5′ 3 ″	$\frac{1}{8}$″	
1 vertical shaft,	Steel,				2 ″
2 safety-catch arms, (wrought and turned,)	Iron,				$1\frac{1}{8}$″
2 safety-catch shafts,	Wrought-iron,				2″
2 side arms, (wrought and turned,) welded to collar, (forged,)	Forged-iron,				2 ″
	Forged-iron,				$4\frac{3}{8}$″
4 safety catches, (on 2″ shafts,)	Cast-iron.				
4 top braces,	Wrought-iron,		$1\frac{1}{2}$″	$\frac{5}{8}$″	
4 bottom braces,	Wrought-iron,		2″	$\frac{5}{8}$″	
2 hand holds,	Forged-iron,			1″	
2 sides,	Wrought-iron,			$\frac{3}{8}$″	
2 side pieces, (connected with side arms,)	Wrought-iron,			$\frac{5}{8}$″	
4 pieces angle iron, (guide irons,)	Wrought-iron,			$\frac{1}{4}$″	
4 pieces angle iron, bottom,	Wrought-iron,			$\frac{5}{8}$″	
2 automatic wagon-stop clips,	Wrought-iron,		$1\frac{1}{4}$″	$1\frac{1}{4}$″	
4 dead-weight bars on automatic wagon stop,	Wrought-iron,		3 ″	$\frac{7}{8}$″	
Main link, (connecting lower clevis)	Forged-iron,				$1\frac{1}{2}$″
Clevises on main chain,	Forged-iron,				$1\frac{3}{4}$″
Bridle-chain links,	Forged-iron,				$\frac{3}{4}$″

GENERAL DATA.

Weight of cage, 2,250 pounds.

Weight of empty mine wagon, 1,000 pounds.

Weight of loaded mine wagon, 4,000 pounds.

Gauge of track, 40 inches.

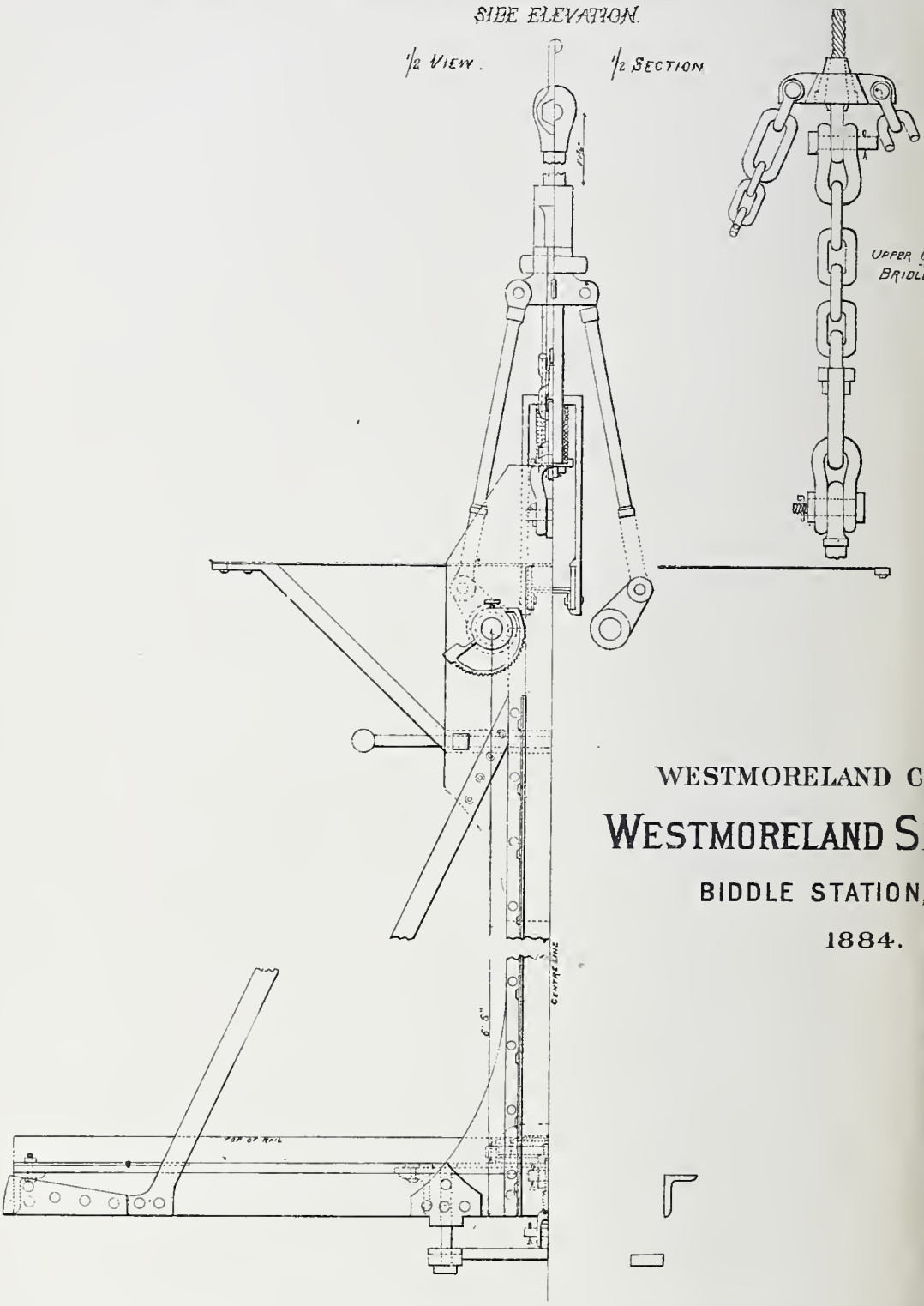
Size of bottom of cage, breadth includes guide-angle irons, 8 feet 4 inches by 6 feet.

Size of steel rope, $1\frac{1}{4}$ inches diameter.

Depth of shaft, 191 feet.

Shaft divided into three compartments, each 6 feet 2 inches wide by 9 feet long.

Shaft guides, 4 inches by 5 inches, (project 4 inches.)



WESTMORELAND CO

WESTMORELAND SH

BIDDLE STATION,

1884.

Co's

T CAGE.

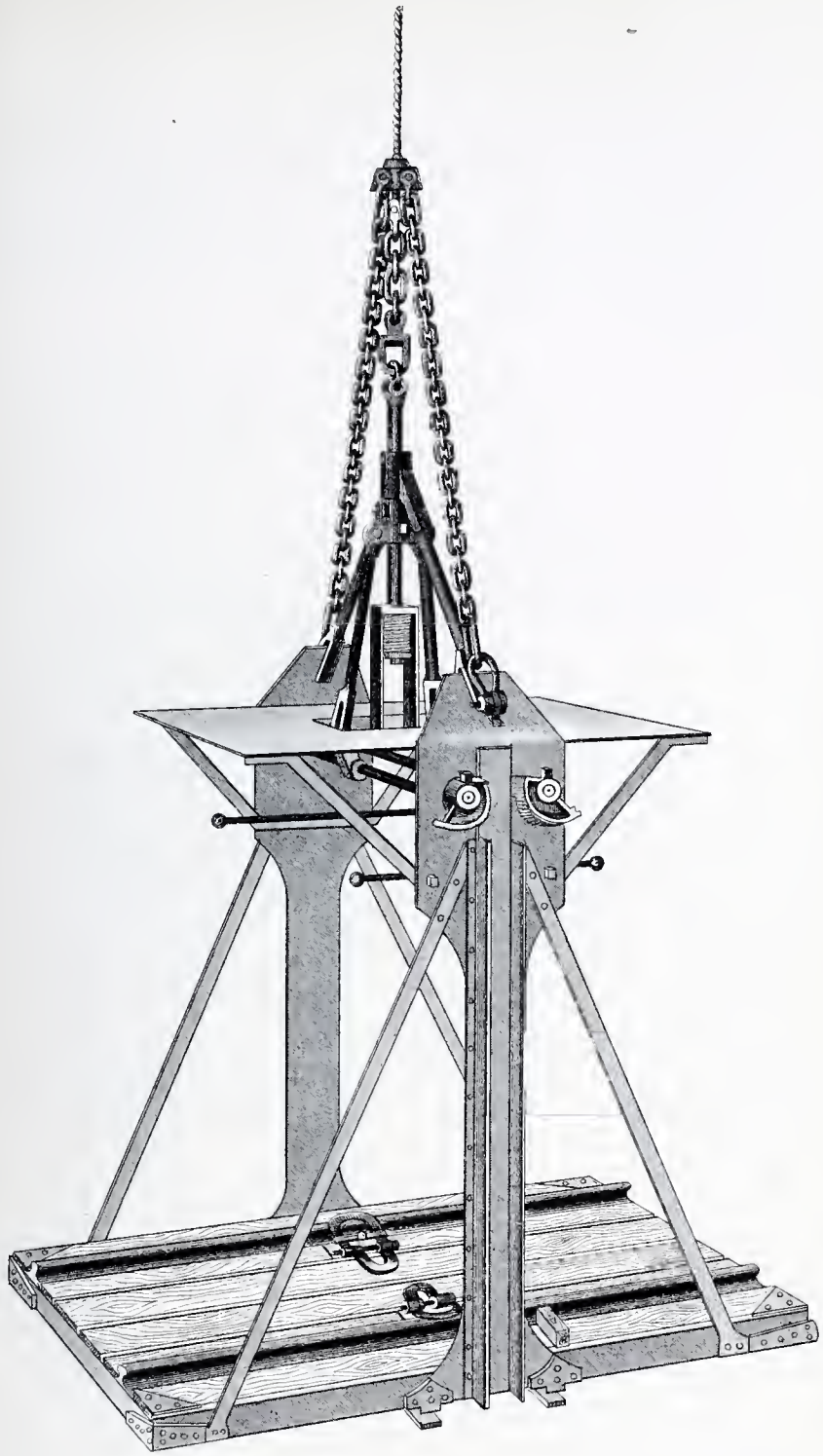
R.

FRONT ELEVATION.

½ View. ½ Section

CENTRE LINE

Drawn by E.C. Brown, C.E.
Office W. C. Co. Irwin, Pa.



WESTMORELAND SHAFT CAGE.

CONSTRUCTED BY
ALEX. WALLACE.

E. C. BROWN,
DRAFTSMAN.

thing like a horse-shoe, placed on each side of the floor of the cage, are connected with heavy, flat bars underneath the cage which extend across the bottom of it. When the cage arrives at the top or bottom of the shaft, these bars rest on the keeps and the horse-shoe-shaped irons are thrown back from the rails and the wagon can be run on or off the cage, but when the cage is raised off the keeps, the weight of the bars underneath throws these irons across the rails between the wheels and effectually prevents any moving of the wagon in lowering and raising the cage.

E. C. Brown,
Civil Engineer.

Office of Westmoreland Coal Company,
November 15, 1884.

Coulter & Huff mine.

A slope opening east of Greensburg on the Pennsylvania railroad, in the Pittsburgh coal seam. Operated by Coulter & Huff; superintendent, A. W. Jones. Ventilated by Murphy fan. Employing over 100 persons inside. It has been running this year 313 days. It was found on my visits to be in good condition.

Alexandria mine.

This is a new mine, opened within the year by the Alexandria Coal Company in Unity township, Westmoreland county. Superintendent, Thomas Donohue. It consists of drift openings on the Pittsburgh seam. Average thickness of coal 6 feet. The coal is shipped by the Pennsylvania railroad. The mine has been running nearly full time since it was opened in April, employing in month of October 49 persons. The mine will be enlarged and will soon be an extensive mine.

Greensburg mine.

Located on the South-West Pennsylvania railroad, near Greensburg. The ventilation in the new opening of this mine has been improved during the year.

United Shaft.

Located at United, Westmoreland county. Operated by the United Coal and Coke Company. Superintendent, F. M. Reynolds. During the year there has been a second opening, air, and traveling-way shaft sunk; 89 additional coke-ovens built; also, 10 blocks of houses, (four houses in each block.) The ventilation of this mine is produced by an exhaust fan. The mine, when visited, was in good condition. Mining-boss, A. J. Cook. I visited this mine four times during the year.

Hecla Shaft.

The ventilation of this mine will soon be improved by the erection of a larger fan. The present fan is too small to supply the required amount of air, and until the new fan is erected this fan is to be assisted by steam in

the hoisting-shaft. At this mine there were one hundred and two (102) persons employed in the month of October. During the year there has been several improvements in outside buildings, &c. Superintendent, Thomas Laird; mining-boss, William Ramsay.

M. M. and M. mine.

This mine has been in operation three hundred and three (303) days during the year, employing in October, ninety-four (94) persons. Superintendent, R. S. Jameson; mining-boss, Israel Linsebigler.

Monastery mine.

This mine has not been running in full this year. Number of persons employed in October, forty-two (42.) Superintendent, Erskine Ramsay; mining-boss, Robert Hair.

Latrobe Coal Works.

Located near Latrobe. Employed in October 38 persons. This is a slope opening, operated by the Latrobe Coal Company. Superintendent, D. W. Jones; mining boss, Alexander R. Snedden.

M. Saxman mine.

Located east of Latrobe. A shaft and drift openings. Employed 58 persons in month of October. Superintendent, F. Kiernan; mining-boss, James Pratt.

Loyal Hanna mine.

Operated by the Loyal Hanna Coal and Coke Company. Superintendent, William Dovey; mining-boss, John C. Dovey. At the time visited, the mine was not working to its full capacity. An air measurement taken near bottom of slope showed an inlet current of 440 feet per minute. Sectional area, $7' \times 7'$. Men were working in three entries on the west side, and in three on the east side. Rooms on west side 20 feet wide, and on east side 16 feet. I understood that there was some talk of having new openings to this mine, which would increase the capacity of the mine and enable those in charge to conduct the mining to a better advantage.

Leechburg Coal Company mines.

The mines of this company are drift openings in the "Freeport Coal Measures." Their Nos. 1 and 2 mines are located east of Leechburg station, on the West Penn railroad. When visited on the 16th of October, they were only working in No. 2 mine. In this mine there were four entries and four rooms working. Thickness of coal, $3' 10''$. Superintendent, D. B. Ashbaugh; mining-boss, John Stroup.

Leechburg No. 3 mine, located west of Leechburg station, employing 70 miners when visited in October. In this mine men were working in three butts and one face entry. The rooms are 25 feet wide and ribs 8 feet wide.

The entries are driven 9 feet wide and 6 feet high. Coal is said to average 4 feet in thickness. Slate roof and fire-clay bottom.

There are several openings to this mine, but the ventilation was not steady. I suggested a furnace, so that the parties in charge could control the ventilation as the condition of the mine demanded. Superintendent, A. L. Ashbaugh; mining-boss, A. L. Anderson.

Bagdad mine.

Located on West Penn railroad, at Bagdad station. When visited, October 15, this mine was working in Nos. 1, 2, and 4 butt entries and in one face entry. There were thirty-four (34) miners employed. The seam of coal is the same as that at the Leechburg mines. Rooms are 24 feet wide and ribs 9 feet. Entries, 9 feet wide and 6 feet high. Superintendent, Alfred Hicks; mining-boss, D. Morcam.

Pittsburgh and Kiskiminitas mine.

This mine is a drift opening, located east of Leechburg, on the West Penn railroad. At the time visited, in October, they were only driving one entry. There were room workings in four entries and drawing ribs in Nos. 1 and 2 entries. The rooms are 28 feet wide and the ribs 8 feet wide. The entries are 9 feet wide and 5 feet 8 inches high. The seam of coal is one of the Freeport seams, averaging in thickness 3 feet 8 inches.

There were three openings, and there was a good current of air. Superintendent, Alfred Hicks; mining-boss, William Lewis.

Roaring Run mines.

These mines were visited in September. They are opened by drifts, in two of the Freeport coal seams. No. 1 mine was not working. In No. 2 mine there were thirty-five (35) men and three (3) boys. They were driving four entries and had rooms working in eight entries. The entries are 8 feet wide and 6 feet high; the rooms 21 feet wide and ribs 15 feet. The workings are double-entry system. The ventilation was deficient, and I ordered a furnace to be put in as soon as practicable. Since my visit, a furnace has been built, and Mr. Franklin, in his October monthly, reports a current of air of 16,800 cubic feet passing through. Superintendent, R. A. Hope; mining-boss, James Franklin.

Fairbank mine.

Operated by the Saltsburg Coal Company. Superintendent, D. S. Robinson; mining-boss, J. B. Johnston. This mine, when visited in September, was found in good condition. The ventilation produced by furnace. An air measurement showed a volume of 17,100 cubic feet passing per minute. They were working in five butt entries. There was no entry driving. The workings were all confined to room and rib work.

They were making new openings in the fourth hill, and a road building

to connect them with the present locomotive road of the old mine. These new openings are to be ready to supply the company with coal when the present workings are exhausted. The distance of hauling will be about two miles.

Isabella mine.

This mine has not been in operation since the 4th of January. The crusher used to prepare the coal for the ovens was burnt. They were compelled to stop the mine until it was rebuilt.

Millwood Shaft.

This mine was visited in April and in October. The mine was not running when visited on the 1st of October, on account of the boiler explosion on the 28th of September, which had destroyed both the boiler and engine-house, and by which John Hanna, the man in charge, had lost his life. By making use of locomotive boiler, &c., to raise steam until the others were sufficiently repaired, the mines were only stopped for a few days.

Arnold mine.

This mine is operated by the Arnold Coal Company. Superintendent, Thomas C. Pears; mining-boss, William Beane.

It is opened in the "Freeport Coal Measures," and consists of drift openings. The mine was visited in February, in April, and in July.

In July, this mine was well ventilated. A new furnace had been built and in use since the 8th of the month, and giving very satisfactory results. A drawing of this furnace was furnished by Mr. Pears, and is accompanying this report. He also furnished me with following sizes of the furnace: "Furnace proper, 10 feet long × 10 feet wide, outside; from hearth to top of furnace, outside, 10 feet; from hearth to top of furnace, inside, 7 feet; width of furnace, inside, 7 feet; from hearth to top of grate-bar, 2 feet 8 inches; from top of grate-bars to center of arch, inside, 4 feet 4 inches; length of grate bars, 5 feet 4 inches; length of flue from furnace to stack, 23 feet; slope of flue from furnace to stack, 12 feet in 23 feet; height of stack from top of flue to surface ground, 23 feet 6 inches; height of brick stack from surface to top, 40 feet; total length from front of furnace to outside stack, 41½ feet; total height of stack from top of grate-bars, 79 feet."

Air measurement, taken by Mr. Beane when testing the power of the furnace, gave a velocity of 420 feet per minute; sectional area, 12′×5½′=66′; volume, 27,720 cubic feet per minute. Number of miners employed in July, 33 men and 3 boys.

Fatal Accidents Reported.

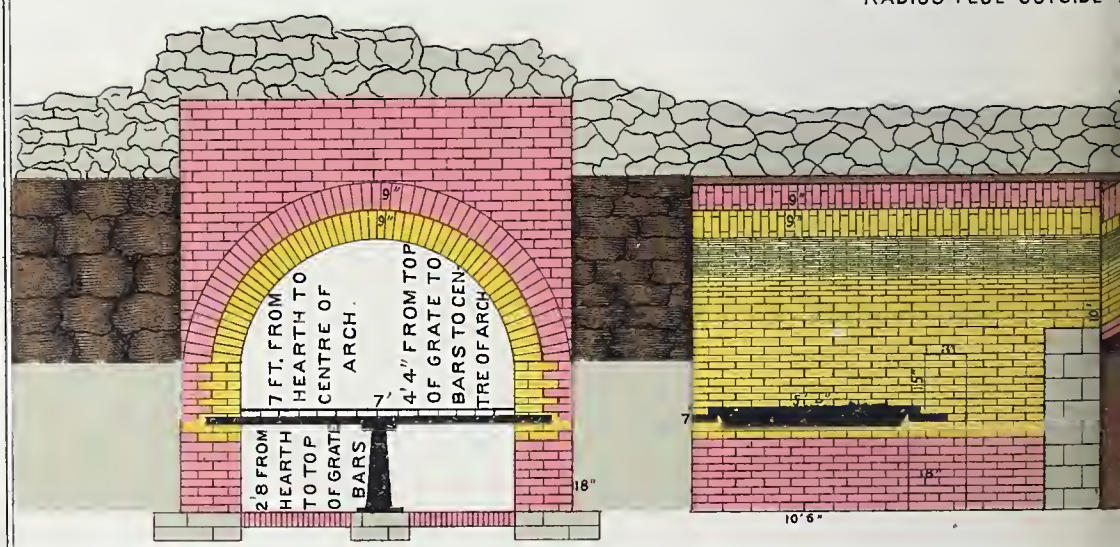
ACCIDENT No. 2.—Frank Brock, a single man, fifty-five years of age, working with his nephew, James Rocks, at the Standard mines drawing the rib between Nos. 1 and 2 rooms in No. 6 entry, was killed by a fall of

PL
Ventilati

THE ARNOLD
M
CHARTIER S
Westmor

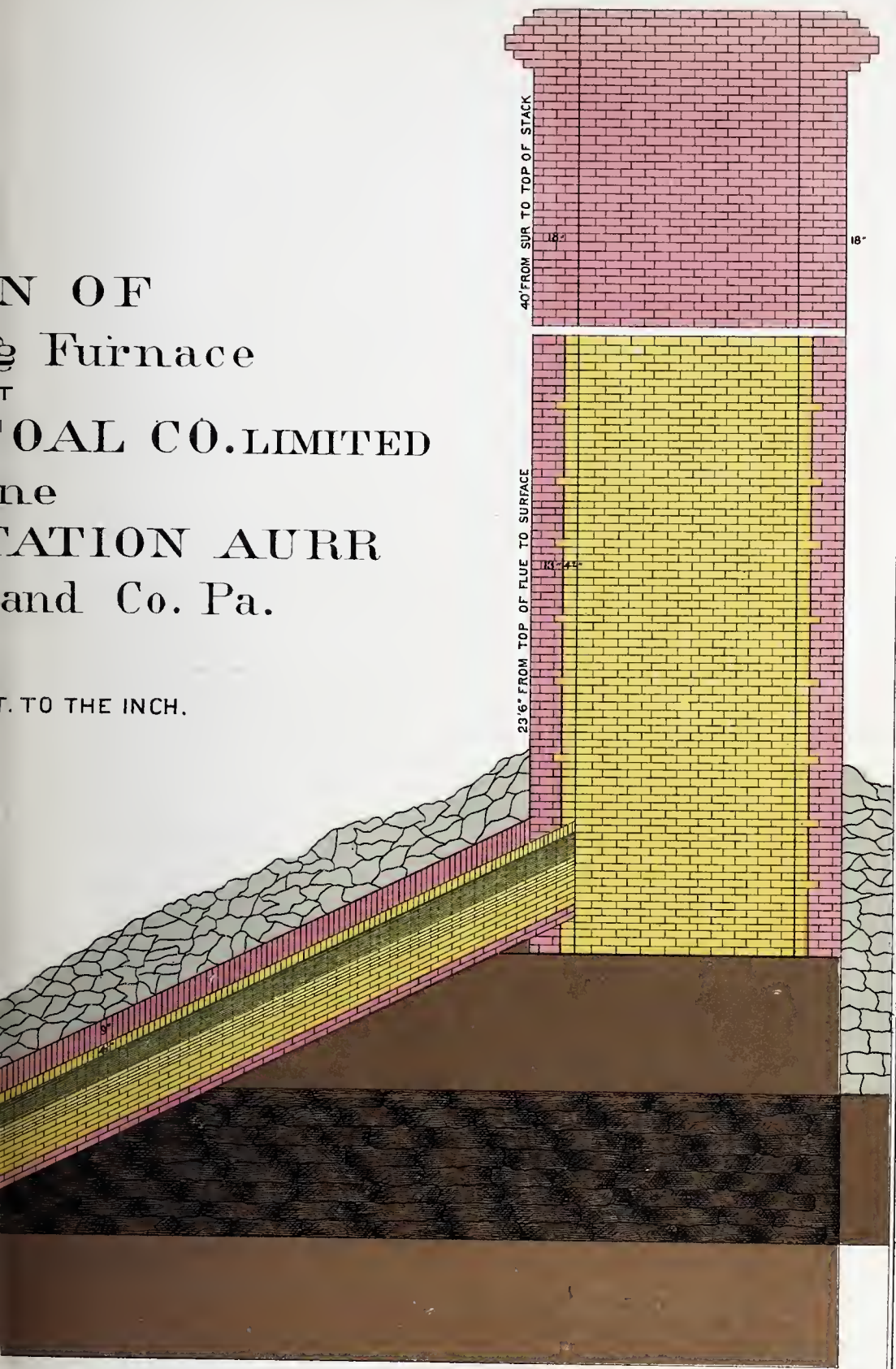
SCALE S

SLOPE OF FLUE 12. FT. IN
RADIUS FLUE INSIDE 28
RADIUS FLUE OUTSIDE 4



N OF
Furnace
T
'OAL CO. LIMITED
ne
TATION AURR
and Co. Pa.

T. TO THE INCH.



roof on the 13th of November, about eleven o'clock, A. M. On the evening of the 12th, before quitting their work, they had knocked some posts out, leaving only two rows to remain for the purpose of saving the face. They expected, after weakening the support in that manner, that the roof would fall before morning; but when they came in the next morning, they found it in the same condition as they had left it. Thinking it safe, they started to work without any apprehension of danger, and continued to work until the time mentioned above. James stated at the investigation that he heard the roof moving, and called on his uncle that it was coming, and for him to get out of the way; but seeing his uncle slow in getting out of danger, he scolded him, but still he did not want to leave his work, and acted as if he thought himself safe where he was. When the roof fell, it knocked out the posts that were put up the night before and caught Frank under it. His body was badly bruised, his skull fractured, his left leg broken, and the right shoulder dislocated. James Daly and his son John, working in room No. 4, and David Blanset, working in the entry, were in at the time of the accident, and they confirmed the statement of James Rocks as to the manner in which it happened.

Accident No. 3.—Joseph Adams, a driver at the Sandy Creek mine of the N. Y. and C. Gas Coal Company, a man thirty-seven years of age, having a wife and seven children, was killed by falling under a pit wagon, on the 13th of November. At the coroner's inquest, the jury rendered a verdict, from the testimony taken, of accidental death.

Accident No. 5.—James Stephenson, junior, a young man seventeen years of age, a son of James Stephenson, senior, met with an accident which resulted in his death on the 16th of February, between the hours of seven and eight o'clock, A. M. He was working with his brother John, drawing a rib in the Noble entry, in the Standard mine. They had commenced working that morning at about six, A. M., and were loading their second wagon, when a part of the roof gave way and fell. James was caught under the fall. His body was badly bruised, his left leg broken, and his abdomen crushed, causing his death in about fifteen or twenty minutes after he was liberated from under the fall. John stated at the time of my investigation that the roof before it fell did not give them any warning, and that the other time it fell prior to the time of the accident it gave them sufficient warning, and that they had left and were not in when it fell. Albert Coburn, the driver, confirmed the statement of John, by stating that he had been in the room with them not over a minute before the accident, and would, in all probability, have been in at the time had it not have been that he wanted to see whether another party had his wagon full. He did not hear the top crumbling, and would have considered the place safe. James Stephenson, senior, the father of the deceased, and his son John, also John Murphy and John Griffin, miners, working not far from place of accident, thought it safer to use three rows of posts than two in drawing ribs under roof of the nature of theirs. The safety of persons drawing

ribs depends greatly on their knowledge of the nature of the roof, and in using timber in sufficient quantity to guard against danger. It is best to weaken the support back at a proper distance from the face, and allow the roof to break and fall. Too many timbers often carry the weight over the working face, and when a fall takes place, it will, as we used to say, take the face with it. Those drawing ribs should study this matter very carefully.

ACCIDENT No. 7.—This accident, resulting in the death of Thomas Harris, occurred at the Isabella mine, on the 11th of December, at twelve o'clock, noon. He died at nine, P. M., of the same date. Harris was forty-eight years of age, and had been mining coal for many years. At the time of accident, he was working in room No. 58, in No. 3 entry. Michael Kornar, a miner, working in the same entry, was returning, after being out to the blacksmith shop, and heard Harris calling. He went into Harris' room and found him lying, and a large lump of coal with some of the roof down, but there was none on Harris. He was groaning, but unable to speak. He had been struck on the head. His jawbone and right temple were crushed. At the time of my investigation, there were several of the persons present that mined near the place of the accident, and that helped to take him out, and, according to their statement, they believed it to be purely accidental.

ACCIDENT No. 8.—Geoge Whitemore, a miner, thirty-two years of age, having a wife and three children, was killed by a fall of slate in the Scott Haven mine, on the 12th December, at half past six o'clock, A. M. The place of accident was in rib No. 2, in Furnace entry. Thomas Senior, a miner, and a brother-in-law of Whitemore, was working in another rib on the right side of the same road, and, according to his statement at the time of the investigation, he heard the slate falling. Whitemore was at the time knocking up some bottom coal. Senior called him, and, receiving no answer, he went over and found Whitemore with his head under the slate. He thought that he was killed instantly. His head was fractured in two places. His forehead had struck against a piece of bony coal that was on the bottom. The slate was about five feet long from point to point, and in one place eighteen inches wide and about ten inches in thickness, and supposed to weigh nearly half a ton. Senior also stated that he thought the accident the result of carelessness on the part of Whitemore, in not examining the slate before he commenced working under it. He said that there was no lack of posts, and that he could not find any fault with the company nor the officials.

ACCIDENT No. 17.—This accident occurred in the Westmoreland shaft, on the 13th of February, 1884, resulting in the death of John Selach, in rib No. 27, in No. 5 North entry, at about ten o'clock, A. M., by fall of slate. Selach and his son-in-law, Francis Holtz, were working together in the same rib. Henry Lewis, the fireman, stated that he was in the rib that morning at about half past three o'clock, and examined the place and found it in a safe condition. The coal from under the slate that fell was mined since he

was in. He considered that both John Selach and Francis Holtz were careful men, and that he always found their work in good order. The piece of slate that fell was on the road side of the rib, and would weigh about 400 pounds. It struck Selach's head against a piece of bottom coal that projected. His head was crushed on both sides—the right side against the coal and the left by the slate. He died in about ten (10) minutes after the accident.

Accident No. 24—Edward Moffat, a single man, thirty-four years of age, was fatally injured in the Amieville mine, operated by N. J. Bigley. He was a miner, and, while loading his wagon, he was struck by slate falling which he had neglected to secure. How often do accidents of this nature occur that the persons themselves could avoid if they would exercise the proper caution; but having too much confidence that the slate will not fall until the car is filled, has led to the death of many.

Accident No. 31.—A young man named George Robinson, who was working for Reidmiller & Kifer, contractors, in the Westmoreland Coal Company's shaft, was killed by slate falling on him in room No. 10, in No. 1 upper north entry, on the 6th of June. He had been working for Reidmiller & Kifer for about three months. William Kifer stated at the investigation that when he came into the room, after the accident, he found Robinson lying with one foot on the top of the bottom coal and his body and head out toward the "gob," with his face downward and the slate resting on the back part of his head. His skull was fractured, and he was dead when found. John Fisher stated that he came into the room and helped to remove him. He confirmed the statement of Kifer, and also stated that, in his opinion, the accident was purely accidental and no one to blame. Henry Lewis and Charles Walters were also present at the investigation; both of them agreed with the statement of Fisher, and they considered that both of the men for whom this young man worked were trusty and careful men. They had in the room under the slate at the time it fell four slate posts, one of which was knocked out. The weight of slate lying on Robinson when found was about 500 pounds.

Accident No. 32.—On the 11th of June, John Johnston, a single man, twenty-four years of age, was severely injured by slate falling on him in the Coal Run mine of the Penn Gas Coal Company, in room No. 25 in No. 14 entry. He and his brother were working together in the same room. At the time of the accident he was "bearing-in," when the slate broke over the coal and brought some of the coal down with it, and caught him across the bowels. He was so severely hurt that he died from the effects of his injuries June 29, at nine o'clock, A. M. An inquest was held over his remains, and a verdict of death caused by the above accident rendered. On my visit to the mine to examine the place of accident, I was accompanied into the room by T. F. Wolf, William Rodgers, and William Dean. We found that the slate measured 6 feet 4 inches in length, and an average of 18 inches in width, and about 10 feet thick. The room was in good con-

dition, and showed in its appearance that it had been worked by experienced miners.

ACCIDENT No. 34.—This accident occurred in the West Newton shaft, on the 24th of July, causing the death of Joseph Frohlich, a married man, forty-four years of age, and said to be an old miner. It resulted from a fall of slate in No. 1 entry south in room No. 15. He was working alone, and came to his work in the morning at his usual hour, and it is supposed that shortly after he commenced his day's work that the slate fell and that he was killed instantly. The driver and the miners working near him when they came in, and not hearing him working, thought that he was not in that day and made no inquiry for him. It was said at the investigation that one man borrowed some of his powder, and went up the room-road until he came to where he kept it in the "gob," and took the charge of powder and went back without going to the face, because he thought that Frohlich was not in. Frank Bovie, a miner who was in the room at the time of my investigation and was boarding with Frohlich, stated that, at about half-past seven o'clock that evening, when they found that he had not come home at his usual hour, he and two others went in search of him. When they came to the face of his room, they found him under the slate, which had fallen in two pieces, one piece, about four feet long and about a foot wide, lying on his body. The other piece was about four feet long and eighteen inches wide—his head was under the edge of this piece. He was bruised on both head and body. The body was cold when found, and, in the opinion of Bovie and his companions, he had been for some time under the slate.

ACCIDENT No. 43.—Michael Bartik, a married man, thirty years of age, was fatally injured on the morning of the 5th of September, while going to work in the Hecla mine. He, in company with three others of his fellow-miners, was going along the main entry between Nos. 4 and 5 butts, when they heard the driver coming with a full trip. His companions turned off the track into a hole made in the rib for shelter.

Stephen Koleum, one of the persons who was present at the investigation, and was with Bartik at the time of the accident, stated that he called on him to turn off the track with them that a full trip was coming, and that he had better wait with them in this hole till the trip had passed by; but he insisted on going on, and when he had reached about 24 feet beyond this place he was caught between the full cars and the ribs. A pick that he was carrying in with him was forced through the calf of his leg. The doctor, on examination of his injuries, considered that his leg would have to be amputated, but that he at the time was too weak to stand the operation, and suggested his removal to the county home for treatment. He was removed, but did not recover sufficient strength for amputation, and death ended his sufferings on the 7th instant. It can be said of this accident, as it may be of many others, that it was the result of recklessly risking one's safety and of not making the proper use of those means provided

to guard against danger. On examining the place of this accident, I found that it happened between two of the shelter holes, at a distance of 24 feet beyond the one, and 22 feet short of reaching the other.

Accident No. 45.—John Hanna was killed by a boiler explosion on Sunday, the 28th of September, at about twenty minutes past twelve o'clock, noon, at the Millwood mine. He was a married man, about thirty-two years of age, and had a wife and three children. He had been a fireman at these boilers for several years, and was looked upon by all who knew him as being a very careful man, and one that was always attentive to his duties. At the time of the explosion he was alone, and to all appearance must have been off his guard. The boilers had been neglected, and suffered to become over-heated and dry, and he must, in his ignorance of their condition, or in his excitement on discovering it, risked his life without properly thinking of the consequences of his action, and had gone to the injector, and was in the act of turning the water into the burning boiler when the explosion took place. The force of the explosion was terrific; two brick buildings, one the boiler-house and the other the engine-house, were demolished. In the boiler-house there were six boilers, 30 feet long and 34 inches in diameter, four of which were in use at the time of the explosion. All of the six boilers were more or less damaged. The one that exploded was the third from the engine-house; it was in fragments; the two ends were hurled in opposite directions. One of the ends had passed through a brick stack and had come to rest in front of a dwelling, and within a few feet of reaching the house. Another boiler, the next to the exploded boiler on the one side, had been hurled into the air, and had in its flight turned a summersault, and was found on its former seating with its ends reversed. Hanna was found with the handle of the injector level grasped tightly in his hand. His skull was fractured, one of his arms broken, and his body badly bruised. He was jammed in between the boiler wall and the engine foundation.

Accident No. 48.—John Brooks, working at the top of the Hecla shaft, had come down from the landing to the surface, and was standing on the ground watching a four-horse team with a heavy wagon, hauling a load of coal. The wheel of the wagon came in contact with one corner of the hoisting derrick with such a force that one of the bracing timbers fell, striking Brooks on the head, which caused his death.

TABLE I.---SHOWING LOCATION OF COLLIERIES IN THE SECOND BITUMINOUS MINE DISTRICT.

NAME OF COLLIERY.	Name of Company.	Loeation—County.	Name of Superintendent.	Post-Office Address.
Alpsville,	Thomas Hackett & Co.,	Allegheny,		Duncan P. O., Allegheny county.
Amerlean,	South-West Coal and Coke Company,	Westmoreland,	E. A. Upstill,	Tarr, Westmoreland county.
Alice,	J. M. Schoonmaker,	do.	John M. White,	Mt. Pleasant, do.
Amleville,	N. J. Bigley,	do.	Hugh McGinn,	Sutervllle, do.
Armstrong,	B. F. Rafferty & Co.,	do.	Alexander Moreland,	Yonghiogheny P. O., do.
Arnold,	Arnold Coal Company,	do.	Thomas C. Pears,	Burrell P. O., do.
Alexandrla,	Alexandrla Coal Company,	do.	Thomas Donohoe,	Greensburg, do.
Blythe,	Y. and A. Coal and Coke Company,	do.	John Blythe,	West Newton, do.
Bessemer,	McClure & Co.,	do.	J. J. Malony,	Mt. Pleasant, do.
Buckeye,	A. C. Cochran, Ex.,	do.	A. C. Coehran,	Stauffer, do.
Bagdad,	Bagdad Coal Company,	do.	Alfred Hicks,	Leechburg, Armstrong county.
Coulter & Huff,	Coulter & Huff,	do.	A. W. Jones,	Greensburg, Westmoreland county.
Duquesne,	N. Y. and C. Gas Coal Company,	Allegheny,	J. W. Doak,	White Ash, Allegheny county.
Donnelly Mlnes, Nos. 1, 2, & 3,	McClure & Co.,	Westmoreland,	J. B. Henry,	Scottdale, Westmoreland county.
Dilllnger,	Dilllnger & Co.,	do.	D. L. Dilllnger,	Tarr P. O., do.
Enterprlse,	Dilllnger & Rafferty,	do.	W. H. Shannon,	Scottdale, do.
Eureka,	Fox, Kifer & Co.,	do.	W. A. Kifer,	do. do.
Etter,	John Etter,	Allegheny,	John Etter,	Wilkinsburg, Allegheny county.
Emma.				
Fairbank,	Saltsburg Coal Company,	Westmoreland,	D. S. Robinson,	Saltsburg, Indiana county.
Greensburg,	Greensburg Coal Company,	do.	A. W. Jones,	Greensburg, Westmoreland county.
Hampton,	Hampton Coal Company,	Allegheny,	Major Lawton,	Wilkinsburg, Allegheny county.
Hecla,	The Hecla Coal and Coke Company,	Westmoreland,	Thomas Laird,	South-West P. O., Westmoreland county.
Hazlett Shaft,	Boyle & Rafferty,	do.	James Devlin,	Stauffer, do.
Hazlett Slope,	do.	do.	do.	do. do.
Isabella,	Isabella Furnace Company,	do.	W. C. Crist,	Cokeville, do.
Keystone, Nos. 1 and 2,	W. H. Brown Sons,	Allegheny,	W. S. Brown,	Port Perry, Allegheny county.
Loyal Hanna,	Loyal Hanna,	Westmoreland,	William Dovey,	Latrobe, Westmoreland county.
Latrobe Coal Works,	Latrobe Coal Company,	do.	D. W. Jones,	do. do.
Larlmer, Nos. 3 and 4,	Westmoreland Coal Company,	do.	F. Z. Schellenberg,	Irwin Station, do.
Leechburg, No. 1,	Leeehburg Coal Company,	do.	D. B. Ashbaugh,	Ashbaugh P. O., Westmoreland county.
Leechburg, No. 2,	do. do.	do.	do.	do. do.
Leechburg, No. 3,	do. do.	do.	do.	do. do.
Lucesco,	Leechburg Coal and Coke Company,	do.	W. H. Wray,	Leechburg, Armstrong county.
Mullin,	Mullin, Strlekler & Co.,	do.	W. D. Mullin, Jr.,	Mt. Pleasant, Westmoreland county.
Millwood,	Millwood Coal Company,	do.	E. B. Kimmell,	Millwood, do.
Monastery,	H. C. Frick Coke Company,	do.	Erskine Ramsay,	Latrobe, do.
Morewood, A,	Morewood Coke Company,	do.	George S. Ramsay,	Mt. Pleasant, do.
Morewood, B,	do. do.	do.	do.	do. do.
M. Graver,	M. Graver & Co.,	Allegheny,	William Fisher,	Verona, Allegheny county.
M., M. & M.,	M. M. and M. Company,	Westmoreland,	Robert S. Jamison,	Greensburg, Westmoreland county.
Markle,		do.		Westmoreland county.
M. Saxman,	M. Saxman, Jr.,	do.	F. Kurnan,	Latrobe, Westmoreland county.

Mill Bank,	Lanfman & Co.,	do.	J. W. Osborne,	Apollo, Armstrong county.
Mayfield,	McClure & Co.,	do.	J. B. Henry,	Scottdale, Westmoreland county.
Northside,	Westmoreland Company,	do.	F. Z. Schellenberg,	Irwin Station, do.
Ocean, No. 1,	Yough River Coal Company,	do.	J. F. Hosack,	Scott Haven, do.
Osceola,	Osceola Coal Company,	Allegheny,	F. H. Dewees,	McKeesport, Allegheny county.
Oak Hill, No. 3,	N. Y. & C. Gas Coal Company,	do.	John McIntosh,	Turtle, do.
Oak Hill, No. 4,	do. do.	do.	do.	do. do.
Penn Gas, No. 1 Shaft,	Penn Gas Coal Company,	Westmoreland,	J. F. Wolf,	Irwin Station Westmoreland county.
Penn Gas, No. 2 Shaft,	do. do.	do.	do.	do. do.
Penn Gas Coal Run,	do. do.	do.	do.	do. do.
Penn Gas, No. 4.	do. do.	do.	do.	do. do.
Penn Gas, No. 3 Shaft,	do. do.	do.	do.	do. do.
Penn Gas Slope,	do. do.	do.	do.	do. do.
Port Royal,	Port Royal Coal and Coke Company,	do.	J. M. Owens,	Fitz Henry P. O., do.
Plum Creek,	N. Y. & C. Gas Coal Company,	Allegheny,	J. W. Doak,	Negley P. O., Allegheny county.
Pittsburgh and Kiskiminetas,	Pittsburgh and Kiskiminetas Coal Company,	Westmoreland,	Alfred Hicks,	Leechburg, Armstrong county.
Rising Sun,	McClure & Co.,	do.	J. J. Maloney,	Mt. Pleasant, Westmoreland county.
Roaring Run, No. 1,	Westmoreland County Coal and Coke Co.,	do.	R. A. Hope,	Satsburg, Indiana county.
Roaring Run, No. 2,	do. do. do.	do.	do.	do. do.
Ridge View,	Ridge View Coal and Coke Company,	do.	D. C. George,	Latrobe, Westmoreland county.
Smithton, No. 1,	B. F. Rafferty,	do.	R. L. Henderson,	Smithton, do.
Smithton, No. 2,	do.	do.	do.	do. do.
Southside,	Westmoreland Coal Company,	do.	F. Z. Schellenberg,	Irwin Station, do.
Spring Hill,	Spring Hill Gas Coal Company,	Allegheny,	W. H. Malone,	Dempsey P. O., Allegheny county.
Sandy Creek,	N. Y. and C. Gas Coal Company,	do.	J. W. Doak,	White Ash, do.
South-West,	South-West Coal and Coke Company,	Westmoreland,	E. A. Upstill,	Tarr P. O., Westmoreland county.
St. Clair.	St. Clair Coal and Coke Company,	do.	M. A. Preston,	Latrobe, do.
Standard Slope,	H. C. Frick Coke Company,	do.	Robert Ramsay,	Mt. Pleasant, do.
Standard Shaft,	do. do.	do.	do.	do. do.
Shaner,	B. F. Rafferty & Co.,	do.	Alexander Moreland,	Yonghlogheny P. O., do.
Star,	A. C. Cochran, Ex.,	do.	A. C. Cochran,	Stauffer P. O., do.
Union,	McClure & Co.,	do.	J. B. Henry,	Scottdale, do.
United,	United Coal and Coke Company,	do.	F. M. Reynolds,	United P. O., do.
Westmoreland Shaft,	Westmoreland Coal Company,	do.	F. Z. Schellenberg,	Irwin Station, do.
West Newton,	West Newton Mine,	do.	A. W. Osborne,	West Newton, do.
West Overton.	A. C. Overholt,	do.	B. F. Overholt,	West Overton, do.
Weinman, Nos. 1 and 2,	Jacob Weinman,	Allegheny,	Jacob Weinman,	Wilkinsburg, Allegheny county.
Yough Slope,	B. F. Rafferty & Co.,	Westmoreland,	Robert H. Latimore,	West Newton, Westmoreland county.

TABLE II.—*A statement showing Characteristiee, Number of Employés, Production, &c., of the respeetive Collieries, in the Seeond Bituminous Mine Distriet, for the year 1884.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Alexandria,	Bituminous,	Drift,					28	3	5	36	2	2		12,166
Alice,	do.	Slope,	2	2	70	2	48	2	7	57	5	4		33,100
Alpsville,	do.	Drift,		1	15	1	145	10	16	171	7	1		12 639
Amerlean,	do.	Drift,	1	1	10	2	30	4		34	3	1		4,396
Amlevllle,	do.	Drift,					98	9	12	119	6	3		55,293
Arnold,	do.	Drift,					47	4	8	59	3			34,404
Bagdad,	do.	Drift,	1			1	29	4	6	39	2	3		12,536
Bessemer,	do.	Drift,	1	1	40	1	49	1	25	75	6	4		49,095
Blythe,	do.	Drift,					113	10	12	135	0	1		45 707
Buckeye & Star,	do.	Drift,	1	1	40	2	44	3	35	82	4	3		4,593
Coulter & Huff,	do.	Slope,	3	2	50	3	104	2	32	138	10	2		95,000
Dillinger & Donnelly,	do.	Drift,					60	5	12	77	7	2		11,704
Donnelly,	do.	Drift,					55	3	9	67	6	2		6.868
Duquesne,	do.	Drift,					139	40	15	191	8	14		8,850
Enterprise,	do.	Drift,					13		3	16	4			9 010
Eureka,	do.	Drift,					54	2	13	69	3	3		5.320
Fairbanks,	do.	Drift,					82	2	29	113	7	2	1	57,381
Greensburg,	do.	Drift,					33	3	9	45	2	2		32 263
Hampton,	do.	Drift,					136	20	20	176	15	1		
Hazlett,	do.	Shaft and slope,	4	3	130	6	65	3	20	88	10	4		5,579
Heela,	do.	Shaft,	2	2	100	4	78	1	31	110	10	2		124,053
Isabella,	do.	Slope,	1	1	40	1	83	3	19	105	11			24,418
Larimer,	do.	Drift,					174	8	30	212	7	1		91,483
Latrobe Coal Works,	do.	Slope,	3	2	32	3	46	2	4	52	3	1		37.663
Leeehburg, No. 1,	do.	Drift,					45	9	9	63	3			11.925
Leeehburg, No. 2,	do.	Drift,					35	6	7	48	3			5 260
Leeehburg, No. 3,	do.	Drift,					59	15	9	83	3			27,902
Loyal Hanna,	do.	Shaft,	3	4	158	7	100	7	51	158	13	3		130 420
Mayfield,	do.	Drift,					18	1	3	22	3	1		14,325
Millwood,	do.	Shaft,	1	2	90	6	44	6	7	57	5	1	1	
Monastery,	do.	Slope,	5	4	135	5	41	3	7	51	4	2		43,058
Morewood, A. & B.,	do.	Shaft,	4	2	45	6	135	5	41	181	15			209 258
Mullin,	do.	Drift,					18	2	3	23	2			5 722

M. Graver,	do.	Drift,					109	17	31	157	18	6		57,835
M., M. & M.,	do.	Drift,					77	5	10	92	8	5		58 000
M. Saxman,	do.	Shaft,					43	4	8	55				43 570
Northside,	do.	Drift,					61	1	12	74	5	2		22,089
Oak Hill, No. 3,	do.	Drift,					49	4	9	62	4			24 392
Oak Hill, No. 4,	do.	Drift,					187	53	34	274	18			179 392
Ocean,	do.	Drift,					205	11	33	249	13			124,904
Osceola,	do.	Drift,					117	13	18	148	14	1		11,692
Penn Gas Coal Run,	do.	Drift,					235	18	31	284	27	1		
Penn Gas, No. 1,	do.	Shaft,					204	12	27	243	20	1		
Penn Gas, No. 2,	do.	Shaft,					210	16	30	256	24	2		
Penn Gas, No. 4,	do.	Drift,					209	16	28	253	26	2		
Pittsburgh and Kiskiminetas,	do.	Drift,					47	7	9	63	3	3		24 933
Plum Creek,	do.	Drift,					149	33	29	211	18			108 489
Port Royal,	do.	Shaft,	1	1		4	41	3	7	51	1			2,388
Ridge View,	do.	Drift,	1	2		1	40		5	45	4	1		3 316
Rising Sun,	do.	Drift,	1	1	55	1	32	2	11	35	2	2		30 504
Roaring Run, Nos. 1 and 2,	do.	Drift,					38	1	7	46	2			6 605
Sandy Creek,	do.	Drift,					164	30	56	250	24	3		138 499
Shaner & Armstrong,	do.	Drift,					150	9	17	176	6			
Smithton, No. 1,	do.	Drift,		1	80	4	96	9	8	113	10	1		8 000
Smithton, No. 2,	do.	Drift,					113	8	12	133	7	2		6 000
Southside,	do.	Drift,					235	19	79	353	19	2		185 227
South-West,	do.	Drift,	1			1	34	2	9	45	4	3		40 790
Standard,	do.	Slope and shaft,	5	4	110	8	147	6	129	272	18	3		174 229
St. Clair,	do.	Drift,		1	60	2	38	2	8	48	4			40 782
Union,	do.	Drift,					11	1	2	14				5 852
United,	do.	Shaft,	4	2	80	4	47	4	10	61	4	4		83 971
Westmoreland,	do.	Shaft,					147	12	75	234	13	1		138,003
West Newton,	do.	Shaft,	1	1	25	4	60	4	9	73	5			
West Overton,	do.	Drift,					30		5	35	4	1		30 880
Yough Slope,	do.	Slope,	1	2	40	2	99	6	14	119	5			31,257

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Second Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Alice,	Furnace,			19,600	2	6	72	56
Amieville,	Small furnace and natural,			8 640	6	7	43	48
Armstrong,	Furnace,		7 x 7	13 000	3		33	36
Alpsville,	Natural,			10 500	4		48	48
American,	Exhaust steam,			6.370	2	2	49	49
Arnold,	Furnace,		7 x 5	11.880	3	3	30	66
Alexandria,	Natural,			6 250	2	2	81	49
Blythe,	Furnace,			15,960	4	6	42	42
Bessemer,	Furnace,		3½ x 4	5 700	3	7	48	36
Buckeye,	Exhaust steam,			11.494	2	2	49	49
Bagdad,	Natural,			8.000	4	4	54	54
Coulter & Huff,	Fan,	6		20,880	3	5	56	56
Duquesne, (idle.)								
Donnelly,	Natural,			5.000	4	6	56	56
Dillinger,	Natural,			8 400	3	2	56	56
Enterprise,	Natural,			9.900	4		52	52
Eureka,	Furnace,		7 x 5½	10.080	2	3	56	56
Fairbank,	Furnace,		6 x 12	10.125	3	3	50	45
Greensburg,	Furnace,		5 x 7	9 780	3	3	48	48
Hampton,	Furnace,		8 x 8 x 52	12.000	3	8	42	42
Hecla,	Fan,	4		9.240	2	7	49	42
Hazlett Shaft,	Exhaust steam,			6 100	2	2	48	60
Hazlett Slope,	Natural,			5 280	2		48	48
Isabella,	Natural,			15 120	2	4	42	42
Loyal Hanna,	Furnace,		6 x 8	24.320	2	12	49	49
Leechburg, No. 1,	Furnace,		10 x 8	8 640	3	4	48	48
Leechburg, No. 2,	Natural,			4 800	2	3	48	48
Leechburg, No. 3,	Natural,			4.800	3	6	48	48
Latrobe Coal Works,	Natural,			7.200	3	3	49	72
Larimer,	Fan,	10		22,172	5		46	46
Lucesco,	Natural,				2	2	42	42
Mullin,	Natural,			3 465	2	2	63	63
Millwood,	Fan,	12		14.400	3		50	100
Monastery,	Furnace,			18 900	2	5	36	63
Morewood, "A,"	Fan,	6		23 296	2	5	56	56
Morewood, "B,"	Fan,	6		10.130	2	5	56	56
M. Graver,	Furnace,		6 x 7½	16 875	4		45	45
M., M. & M.,	Natural,			12.000	7	7	56	56
Markle.								
M. Saxman,	Exhaust steam and natural,			10,500	3	4	42	42
Mill Bank, (idle.)								
Mayfield,	Natural,			2 100	2	2	56	56
Northside,	Natural,			4.320	2		40	40
Ocean,	Furnace,			20.350	3		48	48
Osceola,	Natural,			13 000	4	6	56	56
Oak Hill, No. 3,	Furnace,		4 x 6 x 14	7,590	2		42	46
Oak Hill, No. 4,	Furnace,		6 x 8	24 380	3	4	42	46
Penn Gas, No. 1, Shaft,	Fan,	12		26 950	4	30		49
Penn Gas, No. 2, Shaft,	Fan,	18		33 000	3		50	40
Penn Gas Coal Run,	Furnace,		48 feet F. B.	26 600	6	30		38
Penn Gas, No. 4,	Furnace,		56 feet F. B.	26.640	7	30		72
Port Royal,	Exhaust steam,			11.800	3	6	56	59½
Plum Creek,	Natural,			18.282	6	20	56	56
Pittsburgh and Kiskiminetas,	Natural,			11.200	4	2	54	54
Ridge View,	Natural,			3 360	2	2	98	56
Rising Sun,	Natural,			4.800	4	2	30	48
Roaring Run, No. 1,	Natural,			5.500	2	4	48	48
Roaring Run, No. 2,	Furnace,		4½ x 6	19.200	3	10	48	48
Smithton, No. 1,	Furnace,			14.000	3	10	48	48
Smithton, No. 2,	Furnace,			9.600	2	7	48	48
Southside,	Fan and furnace,	10	10 x 25	97.225	4		45	52
Spring Hill,	Basket,			8.000	2		40	40
Sandy Creek,	Furnace,		8 x 25	17,280	8	4	48	48
South-West,	Exhaust steam and natural,			3,640	4	2	56	56
St. Clair,	Natural,			8,550	2	4	50	30

TABLE III—*Continued.*

Name of Colliery.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Standard,	Fan,	6		34 560	2		49	72
Shaner,	Furnace,			17,480	10	4	46	46
United,	Fan,	12		19,040	2	11	120	60
Union,	Natural,			22,400	2	2	56	56
Westmoreland,	Fan,	12		32 805	3		51	81
West Newton,	Furnace,			16,000	3	4	30	40
West Overton,	Natural,			3,108	2	2	49	42
Yough Slope,	Furnace,		6 x 8	22,900	2	2	48	48

TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the Second Bituminous Mine District, for the year ending October 31, 1884.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Alpsville,	..	...		..	.	.		..	.	..		...	156	8,828	50	2,400	150	7,200
Alice,	.												260	29,120	375	2,400	450	28,800
American,	60	3,360	44	2 464	65	3 640	100	5,600	50	2,800	90	5,040						
Amleville,	90	4 320	90	4,320	90	4 320	150	7,200	130	6 240	150	7,200	120	5,760	130	6 240	130	6,240
Arnold,	211	7,830	185	7,975	207	7,710	145	5,850	130	6,050	140	5,700	210	7,800	170	7,450	220	8 100
Blythe,	340	14,280	320	15,410	360	16,200	350	14 700	350	14,700	375	18,375	350	14 700	300	14,400	400	16 800
Bagdad,	90	7,200			120	9 600	80	6,400	.	...	110	8 800	100	8 000	80	6,400	110	8 800
Coulter & Huff,	430	24,080	..	..	635	22 860	430	24,080	.	...	635	22 860	440	24 640			650	23 400
Duquesne,	188	7,520	...	..	130	52,000												
Enterprise,		9.800	..	..	..	9,500		10,600	.	.	..	10,200		11 900			.	11.400
Eureka,	..												66	3,375	42	2 128	35	3 640
Fairbanks,	45	1,755	60	2,700	240	10,800	55	2,145	50	2,250	245	11,025	60	2 340	200	9,000	255	11.475
Greensburg,													350	16 800	230	10,040	380	18,620
Hampton,	290	12 180			300	12 000	310	13 220	200	8 000	320	12 800	300	12,600			320	12,800
Hecla,	250	12,250	100	4,900	200	8 400	270	13,230	80	3,600	110	10,010	400	19,600	200	10 400	140	12 980
Hazlett Shaft,		5.600				4 600							..	9,400		9,226		
Hazlett Slope,		4 800	.	.		5.000							.		.	7,680		7,680
Isabella,	360	15 120		..	375	15,750	345	14,490	145	6,090	360	15 120	.					
Loyal Hanna,	350	17.150	145	7,105	140	10.200	300	27.160	135	6 615	310	24 320	275	25,340	130	6.370	300	23 550
Latrobe,	110	7,920	100	4,900	130	6,370	120	8,640	100	4 900	130	6,370	120	8 640	100	4 900	140	6,860
Leechburg, No. 1,						..	190	9,120	280	13 440	170	8 160	150	7 200	280	13,400	170	8.160
Larimer, No. 3,	760	34.000	160	6,720	290	10.440	834	33 360		7,888		8 820						
Millwood,	460	23,000	200	10,000	380	15.200	400	20,000	300	10 000	300	14 000	440	22 000	300	12 000	360	14.400
Monastery,	225	14,175	230	8,280	410	14,760	290	18 270	300	10 800	520	18 720	385	24 250	395	14 220	405	14,580
Morewood, "A,"	237	13.272	102	5.712	209	11,704	211	11,816	80	5,280	201	11.256	271	15,176	72	4,032	182	10,192
Moorwood, "B,"	153	8,568	36	4,816	174	9.444	164	9.184	103	5,768	217	12,152	185	10 360	85	4,760	171	9,575
M. Graver,		18 000			360	15,840		19,125			440	19,800	105	g16,725			415	17 430
M. Saxman,	180	7,560	170	7,140			200	8 400	180	7 560		....	160	6,720	140	5,880	180	7,560
M., M. & M.,		.			.	..	250	14,000	150	9,000	250	14,000						
Northside,	...	....	.	..	..	...	.	..	.	..	.	..	80	3,200	..	..	70	2,800

Ocean,			20,100					21,000		20 000				20 800										20,450
Osceola,			12,500					12 500																
Oak Hill, No. 3,		170	7,140		5,880	200		9,200	160	6 720	142	5,964	220	10,120	165	6,930	155	6,510	210	9 660
Oak Hill, No. 4,		160	6,720	173	7 266	540		24 840	170	7,140	165	6,930	510	23,460	195	8,190	190	7 980	570	26 220
Penn Gas, No. 1, shaft,			27 560	440	20,500	500		26,000								26,000	420	21,000	500	26 000
Penn Gas, No. 2, Shaft,		340	17,000	510	16 830	945		37,800												
Penn Gas Coal Run,			23,800	125	13,500	800		27 200												
Penn Gas, No. 4,			26 400	270	9,720	370		26 640								25 920	250	10 020	720	25 920
Plum Creek,			19,687	200	9 600	355		19,963	340	19,125	210	10,080	330	18,563	340	28 800	270	10,800	400	23,300
Pittsburgh and Kisklminetas,		350	7,600	50	4,000	100		8,000	110	8,800	60	4 800	90	7,200		19,125	210	10 080	335	18,844
Rising Sun,		120													89		90	7 200		
Roaring Run, No. 1,																5 000	71	4,000	71	4 000
Roaring Run, No. 2,										5 000				5 000		5 500		5,000		5,500
Ridge View,										6, 000				6, 000		6,500		6 000		7 000
Southside,			23 700	775	16,785	720		37,442		38,517	395	17,775	823	42,796	50	4 930			60	3 360
Sandy Creek,		360	17 290	190	9,120	100		7,180	340	16 320	170	8,160	150	7,200	266	10,400	575	23,000	869	44 820
South-West,		90	5,040	58	8 248	98		5,488	95	5 320	55	3,080	98	5,488	320	15,360	190	9 220	160	7,680
St. Clair,		260	10,400	160	10,080	340		10,200							95	5 320	00	3,360	100	5 600
Standard Shaft and Slope,									215	31,605	210	9,450	410	31,570	210	10,000	150	31,000	251	10 000
United Shaft,		120	1,440	240	14 120	310		16,330	350	19,600	250	14,000	280	16,120	210	30,870	220	9,900	380	29 260
Westmoreland Shaft,		254	27 439	194	8,730	381		30 480	223	24 080	220	9,900	335	20 800	200	14 000	140	8,630	180	11 700
West Newton Shaft,									140	4 200	130	5,400	310	12 400	90	14,400	404	16,160	388	31 423
West Overton,		140	6,840	400	19,200	76		3,192	142	8,958	400	19 200	80	2,560	140	4 560	120	5 040	295	11,800
Yough Slope,			12,100		11,200			21,600							142	8,958	430	19 200	76	3,192

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Alice,	280	31,360	440	28 160	480	30,720												
Amieville,	100	4 800	120	5 760	140	6 720	120	5,760	120	5 760	140	6,720	150	7,200	140	6,720	120	5 760
Arnold,	110	4 800	100	5 000	100	4 500							98	4 440	93	4 755	96	4 380
Blythe,	340	14,220	330	15,840	380	15,960							350	14 700	340	14 280	390	16,380
Bessemer,	240	11,520	110	5,600	340	10 200	210	11,760	53	2,968	240	7,200	90	5,040	65	3,640	260	7,800
Buckeye and Star,	210	7,350	150	6,825	160	8,176							106	8,489	70	5,600	110	8 800
Bagdad,	90	7,200	60	4,800	140	11,200												
Coulter and Huff,	435	24 360			640	23,040	430	24 080			635	22,860	430	24,080			635	22,860
Donnelly,		65 000						7 700						5 600				
Enterprise,		10 200				10,700		10,600				10 000		10,500				9,900
Eureka,	174	9,856	162	9,072	180	10,080												
Fairbanks,	50	1 950	80	4 400	250	11,250	220	11,000	60	3 360	260	11,700	220	11,000	95	5 320	255	11 475
Greensburg,	390	18,720	350	16,800	430	21,070	350	16 800	330	15 740	500	11,700	430	20,640	330	15,849	450	22 050
Hampton,	320	13,440	290	11 600	330	13,200	310	13,020	260	10 400	320	12,800	340	14 280	290	11,600	350	14 000
Hecla,	420	20,580	220	10,560	150	13 650	470	23,030	130	6 760	170	15,470	480	23,520	220	10,560	160	14,560
Hazlett Shaft,		6 670				11,000	180	8,640	90	4,320	180	8 640						
Hazlett Slope,		7 880					180	8 640	90	4 320	200	9,000						
Loyal Hanna,	285	26,082	135	6,615	300	21,795	450	22,050	100	4 900	125	6 125	400	19,600	140	6 860	120	9,600
Leechburg, No. 2,							220	10,560					280	13 440	290	13 920	250	12,000
Leechburg, No. 3,	150	7 200	340	16,320	100	4,800					240	11,520	95	4 563	80	3,840	110	5,280
Latrobe Coal Works,	140	10 800	100	4,900	180	8,820	140	10,080	80	3,920	190	9,610	130	9 360	100	4 900	140	6 860
Millwood,	400	20,000	350	10,000	400	16 000	380	19,000	300	10,000	340	13,600	440	22,000	300	15 000	380	15,200
Morewood, "A,"	264	14 784	67	3,754	274	15,232	181	10,080	135	6,560	164	9 184	276	15,456	200	11 200	320	17,920
Morewood, "B,"	170	9,520	60	3,360	180	10,130	230	13,880	101	5,656	260	14 560						
Monastery,	380	23 940	390	14,040	695	25,020	360	22,680	320	11,520	665	23 940	365	22 995	325	11 700	640	23 040
M. Graver,	90	16,560			375	15,750	160	16 648			380	15,960	95	4 276			360	17 640
M. Saxman,	150	6,300	140	5,880	170	7,140	160	6,720	150	6,300	190	7,980	180	7,561	170	7,140	250	8,400
Mayfield,		2,750						2,200						2 300				
M., M. & M.,	250	14,000	150	9,000	200	12,090												
Northside,	103	4 120			108	4,320	100	4.500			45	2,025						
Ocean,								19,900				20,350	365	17,520	280	11,760	430	27,090

Osceola,																									
Oak Hill, No. 3,																									
Oak Hill, No. 4,																									
Penn Gas, No. 1 Shaft,																									
Penn Gas Coal Run,																									
Penn Gas, No. 4,																									
Port Royal,																									
Plum Creek,																									
Pittsburgh and Kiskiminetas,																									
Rising Sun,																									
Roaring Run, No. 1,																									
Roaring Run, No. 2,																									
Smithton, No. 1,																									
Smithton, No. 2,																									
Southside,																									
Sandy Creek,																									
St. Clair,																									
Standard Shaft and Slope,																									
Southwest,																									
United,																									
Westmoreland Shaft,																									
West Newton,																									
West Overton,																									
Yough Slope,																									

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Amleville,	140	6.720	110	5,280	100	4.800	100	4.800	170	5,280	90	4 320	90	4 320	80	3 840	80	3,840
Arnold,	95	4,350	75	4,125	90	4,200	85	4,050	75	4 125	80	3,900	350	10,500	300	10,500	240	16 560
Alexander,													166	12 360			240	11 760
Blythe,	350	14,700	300	12 600	360	15 120	360	15,120	350	14,700	380	15,960	340	14,280	350	14,600	380	15,960
Bagdad,	100	8 000	80	6 400	120	9 600												
Bessemer,	280	15,680	70	3,920	340	11,200												
Buckeye & Star,							300	14 700	130	6,370	140	7 294						
Coulter & Huff,	420	23,620			610	2 600	380	21,280			460	16,560	340	19 040			500	18,000
Donnelly,								2,100						5,000				
Eureka,	176	9,856	162	9,072	180	10,080	180	10,125	165	9,287	182	10,237						
Fairbanks,	245	12 250	110	6,160	275	12 375	220	11,000	205	9 225	250	11.250	220	11 000	140	7,840	255	11.475
Greensburg,	210	10.080	190	9 120	230	11.270	155	7.200	150	7,200	165	8,085	150	7.300	130	6 240	200	9.600
Hampton,	300	12,600	260	10,400	320	12 800	310	13,020	260	10 400	310	12 400	310	13,020	220	8,800	320	12,800
Hecla,	350	17.150	110	5,280	130	11.830	250	12.250	110	5,720	170	7 140	200	9,800	80	11,560	170	7,140
Hazlett Shaft,	170	9 520	120	6,680	150	8 400	170	7,460	140	6 720	100	6 100	75	3,600	60	3 328	90	4 398
Hazlett Slope,	80	3.840	115	5,520	80	4 320	170	7 460	140	6,720	100	6,100	90	4 398	100	4 800	36	3 408
Loyal Hanna,	300	147,000	130	6,370	120	9 600	305	14,945	135	6,615	130	10,400	320	15 680	130	5 370	290	13.425
Leechburg, No. 1,	200	9,600	160	7,680	180	8 640												
Leechburg, No. 2.																		
Leechburg, No. 3,	78	3 744	50	2 400	1.0	4 800	125	6,000	60	2,880	96	4 608						
Latrobe Coal Works,	120	5 880	100	4 900	110	7,920							130	6 860	110	5,390	110	7,920
Larimer, No. 3,	95	4.370	545	21 800	80	6 140	190	8,740	510	18,360	470	28 770	142	6,532	580	20,880	590	34 822
Millwood,	440	22.000	300	10,000	360	14,400	400	20.000	300	10.000	340	13,600	350	17,500	300	10 000	350	14 000
Monastery,	520	18.720	265	9 540	300	18,900	520	18,720	.	. .	.	. .	515	18.540	260	9,360	300	18.900
Morewood. A.,	240	13,440	140	7,896	420	23.420	230	15,680	.	. .	. .	. . .	277	15 532	131	7 336	444	24 864
M. Graver,	95	17,100			370	16 650	90	16,200	. .	.	. .	. .		9.448			380	17.100
M., M. & M.,	200	12 000	150	9.000	200	12,000				. .	.	. .	200	12 000	150	9 000	150	9 000
M. Saxman,	180	7.560	170	7,140	200	8 400	180	7,560	.	. .	.	.	170	7,140	160	6 720	250	10,500
Mayfield,								2,100										
Northside,	53	2,385	51	2,295	46	2 070	95	4 275	83	3 735	86	3 665	88	3 520	. .		80	3,200
Ocean,	.	2,000	. .	. .	. . .	20,350	. .	19,300	. .	8,350	. .	19,500	.	20,000	. .	7,600	. .	20,050

Osceola,	105	10,000	104	9,500	108	13,000																
Oak Hill, No. 4,	180	7,580	162	6,804	600	27,600	183	7,686	172	7,224	580	28,680	195	8,190	168	7,056	550	25,300				
Penn Gas, No. 1, Shaft,		24,960	400	20,000	485	25,220		26,000	410	20,500	500	26,000		25,460	400	20,400	540	26,460				
Penn Gas, No. 2, Shaft,	250	14,250	340	14,280	950	38,000	320	18,240	380	15,960	200	44,000	335	30,190	350	15,050	900	36,600				
Penn Gas Coal Run,		26,640	260	24,400	740	26,640		26,640		25,000	750	27,000		28,120	320	26,940	700	26,600				
Penn Gas, No. 4,		25,200	270	24,060	370	16,640		28,800	250	12,500	400	28,800		26,640	280	12,880	400	28,800				
Plum Creek,	300	16,875	160	7,630	295	16,593	290	16,875	150	7,260	330	16,875	300	16,875	160	7,680	360	16,875				
Pittsburgh and Kiskiminetas,	100	8,000	80	6,400	120	9,600																
Rising Sun,	190	10,654	70	3,920	290	8,700																
Roaring Run,		2,300		2,100		2,300		2,100			1,600	2,000										
Southside,	385	18,320			694	36,088	360	15,750	305	13,725	720	30,440	440	19,800	318	14,210	750	39,000				
Sandy Creek,	290	13,920	170	8,160	90	4,320	310	14,880	170	8,060	120	5,760	250	12,000	130	6,240	150	7,200				
South-West,	85	4,760	55	3,080	90	5,040	65	3,640	65	3,640	80	4,480	80	4,480	70	3,920	70	3,920				
St. Clair,	240	9,600	150	8,100	330	9,900							200	8,000	150	7,800	280	8,400				
Standard,	450	25,200	220	15,840	520	37,440	450	25,200	440	22,440	490	35,280	460	25,760	380	21,280	360	25,920				
Shaner,	200	13,600	190	8,760	335	17,510	170	19,610	150	6,900	420	19,320	170	47,750	150	6,900	380	17,480				
Smithton, Nos. 1 and 2,								15,200														
United,	150	8,400	200	11,200	300	18,480	70	9,520	240	13,440	310	16,800	90	5,040	60	3,360	260	14,500				
Union,							160	6,300	70	3,920	180	10,080	120	6,720	70	3,920	110	6,160				
Westmoreland Shaft,	213	10,224	200	9,000	500	40,500	90	15,200	180	9,180	444	35,964	190	14,400	218	9,810	400	32,400				
West Newton,	170	5,100	200	8,400	476	16,000	256	11,200	220	9,240	430	17,200	190	5,700	150	6,300	400	16,000				
West Overton,	140	6,360			74	3,108							135	6,615		2,016	74	3,108				
Yough Stope,		13,200		12,100		22,900																

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Alice,	150	12 600	200	11,000	290	16,240	140	17,080	220	12,320	350	19,600	100	9 800	170	9 520	180	10,080
Amieville,													140	6,720	130	6 240	150	7 200
Arnold,	380	11.400	340	11,900	210	13,860	350	10,500	310	10,850	180	11,880	370	11,100	330	11,550	230	15.180
Alexandria,	78	7 254			170	7 050	80	6.480	54	1,620	125	6,250	88	7,656	142	7 497	160	7.737
Bagdad,	120	9.600	80	7,200	100	8.000							100	8,000	80	6,400	100	8,000
Bessemer,	110	4.800	60	2,880	140	5 880	170	6 160	80	3 360	190	5,700						
Blythe,	350	14,710	340	14.280	360	15,120	350	14.700	360	15 120	380	15,960	340	14,280	340	14,280	360	15,120
Coulter & Huff,							360	20,160			580	20,880						
Donnelly,														5,200		5,200		5,000
Fairbank,	60	2.520	140	5,880	240	10,800	50	2,100	120	6.720	225	10,125	80	2,100	125	7.000	230	10 350
Greensburg,	130	6,240	130	6,240	210	10 290	180	8,640	190	9,120	220	9,780	140	6,720	130	6 240	210	10,290
Hampton,	300	12,600	260	10,400	300	12,000	290	12,180	260	10,400	300	12 000	330	13 860	260	10 400	320	12.800
Hecla,	200	9.800	60	3,120	110	6,720	190	9,310	90	4,680	220	9 240	250	12,250	100	4,900	180	7,560
Hazlett Slope,	100	4·800					100	6,100	80	4.860	100	6,100	104	8 240				
Hazlett Shaft,					110	5 280	110	5.280	130	6,240	110	5,280	158	5 584				
Loyal Hanna,	315	27.260	130	6 370	280	20.100	430	31,360	140	6,860	250	22,145	400	19,600	140	6 840	215	21.485
Leechburg, No. 3,	85	4,080	68	3,264	100	4 800	120	5.760	65	3 120	100	4,800	190	9,120	165	7,920	170	8,160
Latrobe,	120	8.640	100	4,900	130	6 370	110	5,390	90	4 410	100	7.200	110	7.920	100	4 900	120	5.880
Larimer,	110	5,600	140	6,440	430	15.480	260	11,960	420	15,120	92	4 232	93	4 270	490	17.640	90	4 140
Mullin,	55	3,465	63	3 528	71	4 473	50	3,150	50	1 800	55	3 465	50	2,520	41	2,296	75	4 625
Millwood,	440	22 000	300	10.000	340	13,600	420	21.000	300	12 000	360	14,400	480	24 000	300	10.000	380	15,200
Monastery,	515	18,540	260	9.360	300	18 900	520	18 720	265	9,540	300	18 900	510	18,360	260	9,360	295	18,585
M., M. & M.,	150	9,000	200	12 000	200	12,000	125	16,875			350	15,750	200	12,000	120	9,000	200	12.000
Morewood, "A,"													317	17.775	220	12,320	475	26,600
M. Graver,							125	16,875			350	15,750	92	16 162			375	16 875
M. Saxman,							200	8,400	180	7,560	250	10.500	180	7,560	150	6,300	200	8 400
Mayfield,														1,600		1.600		1,500
Northside,														3 540		3 400		3,320
Ocean,		20.000		7 600		20 050								20,400		5,000		21,000
Oak Hill, No. 4,	162	6 804	161	6.772	580	25.680	185	7 770	170	7,140	530	24 380	150	16 520	170	7,140	580	25,680
Penn Gas, No. 1,		26,950	430	21,930	550	26,950		25,480	450	22,500	550	22,950		28,420	440	22,000	580	28,420

Penn Gas No. 2,	320	16,000	380	15,960	900	36,000	320	16,000	440	15,840	825	33,000	350	15,000	410	14,760	900	36,000
Penn Gas Coal Run,	.	26,600	320	17,440			. .	25,500	380	15,960	700	26 600		36 600	330	13,020	690	26,220
Penn Gas, No. 4,	. .	26,640	250	11,509	350	25.200		25,920	260	11,960	370	26 649		26,640	260	11,960	370	26,640
Plum Creek,	330	18,562	170	8,160	325	18,282	315	17,719	165	7,920	325	18,282	315	17,719	165	7,920	325	18 280
Pittsburgh and Kiskiminetas,	100	8,000	90	7,200	140	11,200			.				150	12,400	70	5 600	160	12 800
Rising Sun,	190	5,700	50	2,400	80	3 360	200	6,000	60	2 880	100	4 800						
Roaring Run, No. 2,	.		.				400	19 200	300	14 400	400	19,200	350	16,800	33	15,840	350	16 800
Southside,		71,632		68,376		65,120		65 763		61,475		59,785		67,602		64 530		61 457
Sandy Creek,	360	17 280	320	10,560	150	7,200	360	17,280	160	7,680	100	4,800	300	14 400	150	7,200	120	5,760
South-West,	60	3,360	55	3,080	55	3,080	60	3,360	50	2,800	65	3 360	55	3 080	50	2 800	50	2,800
St. Clair,	160	8 000	120	6 480	285	8,550							260	10 400	180	9,720	350	10,500
Standard,	360	17,280	510	28,560	430	30,960	350	19,800	440	24,640	480	34,560	360	17,640	500	28,000	600	43,200
United,	230	12 880	105	5,880	250	14 000	160	8 960	160	8,900	340	19 040	260	14 560	160	8 960	340	19,040
Union,	500	28,000	300	18,900	600	33 600	400	22 400	300	16 800	400	22 400	500	28,000	400	22,400	500	28,000
Westmoreland,	94	14,040	179	9,127	400	32,400	208	10,608	230	10,350	405	32 805	226	11,526	242	10,790	460	39,260
West Newton,	. . .	. . . .	. .	. . .	. . .	.	.	. . .	.	. .		. .	200	6 000	170	7,140	410	16,400
Yough Slope,	. .	. . . .	. . .	. . . .	. .	. . .	.	. . . .	. .	. . .	. .	. . .	. . .	14,500	.	12,400	. .	21,200

LIST OF ACCIDENTS *occurring in the mines of the Second Bituminous Coal District of Pennsylvania, for the year ending October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
Nov. 5	Daniel Harrison,	24	Single,					Leg broken in Westmoreland shaft.
13	Frank Brock, Sr.,	55	Single,					Killed by fall of roof in Standard mine.
13	Joseph Adams,	37	Married,					Killed by falling under loaded wagon in Sandy Creek mine.
27	Joseph Erle,	35	Married,					Leg broken in Penn Gas shaft, No. 2.
29	James Stephenson,	17	Single,				Dec. 3	Killed by fall of roof in Standard mine.
Dec. 8	John Miller,	35	Married,					Back injured by fall of slate in Coulter & Huff mine.
11	Thomas Harris,	48	Married,	8				Killed by fall of coal and roof in Isabella mine.
12	George Whiteman,	35	Married,	3				Killed by fall of slate in Ocean mine.
15	Anthony Myers,	38	Married,					Struck by coal; eye injured in Coulter & Huff mine.
21	J. L. Jones,	34	Married,					Back injured by fall of roof coal in Coulter & Huff mine.
Jan. 2	Al. Wangaman,	33	Married,					Hip broken by fall of slate in Coulter & Huff mine.
11	James McKenna,	21	Single,					Fingers bruised by wagon in Hazlett mine.
14	John Karmosice,	40	Married,					Leg broken by fall of slate and coal in Westmoreland shaft.
Feb. 2	James Butcher,	49	Married,					Head bruised by fall of slate in Eureka mine.
7	George Gizel,							Leg broken by slate in the Southside mine.
12	D. B. Carnes,	25	Married,					Arm broken by wagon in Fairbanks mine.
13	John Selach,	48	Married,				Feb. 15	Killed by fall of slate in Westmoreland shaft.
26	E. Burns,	14	Single,					Leg slightly bruised in Hazlett mine.
26	Charles Regan,	21	Single,					Leg broken while caging in Hazlett shaft.
Mar. 19	C. Chrisbaugh,	22	Married,					Injured by being caught between wagons at Donnelly mine.
	Thomas J. Armstrong,	38	Married,					Sprained ankle and bruised arm by fall of coal in Coulter & Huff mine.
24	George Anding,	20	Single,					Injured by fall of slate in Penn Gas, No. 1 shaft.
May 12	Frank P. Myers,	28	Married,					Head cut and hip bruised by fall of coal in Greensburg mine.
12	Samuel Burghardt,	50	Married,					Leg bruised slightly in West Newton shaft.
12	A. J. Cook,	40	Married,					Shoulder bone and ribs broken in United shaft.
17	A. Rupert,	35	Single,					Slightly bruised by being caught between wagon and ribs in Fairbanks mine.
19	Edward Moffat,	34	Single,					Fatally injured by fall of slate in Amieville mine.
	R. Ricer,	25	Single,					Finger broken by piece of slate in Yough slope.
31	Samuel Williams,	16	Single,					Leg broken by riding on mine wagons in Southside mine.

June	6	George Robinson,	17	Single,	..			June 10	Killed by fall of slate in Westmoreland shaft.
July	18	Samuel Kingman,	17	Single,	..			.....	Knee fractured by fall of slate in Hampton mine.
	19	Isaac Kennedy,	..	.....	..			.....	Injured by fall of slate in Oak Hill mine, No. 1.
	24	Joseph Trohlech,	44	Married,	..			.....	Killed by fall of slate in West Newton shaft.
Aug.	4	Aug. Haberlin,	45	Married,	..			.....	Thigh broken in Loyal Hanna mine.
	7	John Shearer,	36	Married,	..			.....	Injured by fall of slate in Yough slope.
	18	Jerry Shaner,	32	Married,	..			.....	Bruised back and hip by falling off his trip in M., M. & M. mine.
	19	John Painter,	..	.....	..			.....	Leg broken and face bruised by falling slate in Penn Gas shaft.
	27	Mata Shibo,	35	Married,	..			.....	Leg broken by fall of roof in Alice mine.
	30	C. Wolford,	24	Single,	..			.....	Leg broken by door closing on entry before his trip passed in the Bagdad mine.
Sept.	5	James Powell,	28	Single,	..			.....	Skull fractured by being kicked by a mule in the Hecla mine.
	5	Michael Barlick,	30	Married,	1			.....	Leg mashed by mine wagons in Hecla mine; died September 7.
	15	Michael Pundayes,	22	Single,	..			.....	Burnt hand and face slightly by igniting gas that had accumulated after a fall of roof on No. 1, south butt entry, Hecla mine.
	28	John Hanna,	32	Married,	3			.....	Killed by boiler explosion at the Milliwood shaft.
Oct.	11	Edward Tarr,	..	Single,	..			.....	Toe cut off by mule stepping on it in Hecla mine.
		August Anderson,	..	.....	.			....	Leg broken by coal falling on him in No. 4, Penn Gas mine.
	30	John Brooks,	23	Married,	..			.....	Fatally injured by being struck on the head by a piece of falling timber at the Hecla shaft.

THIRD DISTRICT.

To the Honorable J. SIMPSON AFRICA, *Secretary of Internal Affairs of Pennsylvania:*

SIR: In compliance with the twelfth section of the act of the General Assembly of April 18, 1877, I have the honor of submitting my fourth annual report of the inspection of mines in the Third bituminous coal district of Pennsylvania, for the year ending October 31, 1884.

The number of accidents that has occurred in and about the mines during the year was 28, 8 of these proving fatal and 20 non-fatal. Some of those unfortunate men who lost their lives were almost entirely ignorant of the business of coal-mining, and their term of service as miners was a very brief one. They knew little or nothing of the safeguards to be employed for their safety, and not only were they inexperienced men, but were ignorant of the use of our language, and could not possibly be instructed properly and warned of their danger by the officials in charge of the mines where they were employed. A decrease in the number of fatalities is not likely to occur so long as the laws of the State allow the employment of such men in the mines. But we had other miners who lost their lives to which the objection of their inexperience cannot be raised, and the places where they were working, in a practical sense, I would have considered very safe. I am not one of those who believe in making miners mere machines by legislative enactments, but it does seem that there is a certain class of workmen so constituted that they need constant watching and prompting even to get them to use the necessary precautions to protect their own lives; consequently, stringent rules, to insure more thorough discipline, must be put in force by some agent about the mines, by authority of law, to correct the habit of carelessness so prevalent among miners. The mine boss can be employed very successfully for such a purpose. Part of his duties should be to visit every miner's working place at least once in every twenty-four hours, to see whether or not it is in a safe condition for him to work in; or if the mine was too extensive for him alone to do the work, he should be allowed to call to his assistance some practical and responsible person. During his visitations, if he found any miner persisting in not securing loose coal, or not timbering the roof properly and sufficiently, he should have the power to deal with the offender severely and promptly. I am certain that such methods of procedure would result in protecting life if put into force. Also, I find that wherever there is inability and inexperience in the mine management, (officials,) and a lack of discipline among the employés, there will be found at such

mines the natural results (accidents) in an excessive degree; at least, this is my opinion, confirmed by my observation while in this office.

I have visited all the mines in the district, and a large portion of them twice, during the year. As to their healthiness and safety, I found them in a very satisfactory condition, with but few exceptions. The ventilation in very many instances I found to exceed the requirements of the law, and the drainage of the mines very good. There are but a few mines in the district still depending on the natural forces for producing ventilation, and although the number of men employed in them is not large, I think that the time has arrived for mines, no matter how small, to be ventilated by artificial means (fan or furnace.) The exhaust steam from steam pumps is a very unsatisfactory ventilating power, as when the pumps are stopped the air becomes stagnant, and this must occur frequently during the day. If steam is to be allowed at all as a ventilating power, the steam should be conveyed from the boilers in separate pipes to permanent jets located in the ventilating shaft. The mining law should regulate this matter, and it should state definitely the greatest distance that the ventilating current should be from the face of headings and other workings. It should also require that the miners when working in a shaft over one hundred or one hundred and twenty-five feet in depth should be raised from the mine by machinery. It is quite a hardship to require men to travel up a stairway on a sixty-degree angle, and from a vertical depth of two or three hundred feet, after doing a hard day's work.

Other improvements could be suggested to the present defective mining law, but they are so numerous that a thorough revision is absolutely necessary. I would, therefore, suggest that a commission, similar to that which was appointed to revise the anthracite mining law, be appointed to revise the bituminous law.

CAUSES OF FATAL AND NON-FATAL ACCIDENTS.

Fatal.

By fall of roof,	5
By fall of coal,	1
By mine wagons,	1
Miscellaneous,	1
Total,	8

Non-Fatal.

By fall of roof,	4
By fall of coal,	4
By mine wagons,	8
Miscellaneous,	4
Total,	20

Number of widows caused by fatalities,	4
Number of orphans caused by fatalities,	10

MINING STATISTICS FOR THE YEAR 1884.

Number of mines exhausted during the year,	5
Number of mines opened during the year,	5
Number of mines now in the district,	90
Number of employés employed inside,	4,242
Number of employés employed outside,	761
Total,	5,003

Number of tons (2,000 pounds) mined during the year,	2,270,526
Average number of days worked during the year,	183
Average price paid for digging per ton, in cents,	63
Number of tons mined per fatal accident,	295,066
Number of tons mined per non-fatal accident,	113,526
Number of employès per fatal accident,	620
Number of employés per non-fatal accident,	248
Average number of mules employed,	368
Number of coke ovens now in operation,	317

These statistics are about absolutely correct, as I have had a report from nearly every operator in the district. It will be noticed that the mines, on an average, have only been in operation little better than seven months during the year, which is due to the depression in the coal trade.

In another part of this report will be found tables giving the monthly air measurements, number of employés, number of accidents, name of mines and where located, name and height of every coal seam mined, a comparison of accidents, tonnage, and employés for the four years, with a description of all the mines and fatal accidents, &c.

Unless re-appointed, this will be my last yearly report as inspector, as my present term of office will expire during the year. I, therefore, extend to all mine officials and others my grateful thanks for their uniform courtesy and assistance during my term of office.

All of which is respectfully submitted.

I am yours,

Very respectfully,

THOMAS K. ADAMS,

Inspector.

WHEELER P. O., MERCER COUNTY, PA., *December 11, 1884.*

DESCRIPTION OF FATAL ACCIDENTS.

Accident No. 1.—Hugh Jackson, senior, aged sixty years, had his back broken by a fall of rock weighing about five hundred weight, while mining in his room in the Bethel shaft, on November 9, 1883, and died of his injuries January 11, 1884. Mr. Jackson had sufficient quantity of props in room to secure the roof, but as the stone which fell on him was resting upon the solid coal in wall face, and to have set a prop so close to coal would have inconvenienced him very much in under-cutting it, so, thinking that there was no danger of the rock breaking over the solid coal, he took too much risk. He was an experienced miner. Leaves a wife and large family.

Accident No. 4.—Lars Anton Hagcline, miner, aged nineteen years, was killed instantly by a fall of rock and top coal in Dagus mine, No. 2, Elk county, on the 15th of January, about nine o'clock, A. M. He and his brother and J. Peter Johnston were drawing pillars in No. 7 cross-entry, and Lars Hageline and Johnston were mining when the stone fell on the former. They had one prop set to secure the stone, but it was insufficient to support it. The mine-boss, Mr. Curric, had informed the men the day previous to the accident to set more props to the roof, but they neglected to do so. They were kept well supplied with timbers. The weight of stone that fell on Hageline was about thirty-two hundred weight. Johnston was hurt, but not seriously. Hageline was unmarried.

Accident No. 15.—Augustus Nelson, miner, aged thirty-two years, was killed instantly by fall of rock while mining in his room in the Black Diamond mine, Mercer county, on March 17. The mine was idle on the 17th, but Nelson went in to mine coal. On that day another Swede, Gust Freadland, was in his room about two o'clock and requested Nelson to go home, and at the same time informed him that he thought the stone he was working under was loose. Nelson told Freadland that he would secure the roof and would be out of mine in about fifteen minutes. Freadland became alarmed about Nelson not coming home. Consequently, he got a few of the other miners to go into the mine with him to find out what was detaining Nelson. They went to Nelson's room and found him dead, under a stone about one ton in weight. It was about six o'clock, P. M., when found. Nelson was unmarried.

On May 2, John Funkhouser, miner, aged thirty-five years, was so seriously burned in Allegheny mine, Butler county, that he only lived about ten hours. Mr. F. was preparing to fire a shot in the coal, and was drying, with the flame of his lamp, the oil that was on the paper squib which was filled with powder, and while doing this he ignited the powder in the squib, the flame reaching sixteen pounds of powder in a keg near the place where he was sitting; all being ignited, his clothing caught fire. Seeing that he could not extinguish the flames, he ran out to the entry road calling for help. By the time Mr. Listen and others reached him, he was being roasted alive and in terrible agony. The men that came to his assistance soon suc-

ceeded in extinguishing the flames by putting the victim in the drain. He was taken home, and suffered severely until he died.

ACCIDENT No. 19.—George Hardchadock, miner, aged twenty-one years, was killed instantly by a fall of coal, in No. 4 cross-entry in Walton mine No. 2, Jefferson county, on June 9. He was turning a room off the entry, and fired a shot in the coal on the Saturday evening when he quit work, and on returning on Monday morning he sat down to mine in front of the shot coal, and had not long been mining when the coal fell. He was told by some of the other miners to support the loose coal, but it is supposed that he did not understand them, as he was a Hungarian and had only been in this country but a short time. He was also an inexperienced miner. He had another Hungarian working with him who was more experienced, but was not at work the day that the accident happened. He was unmarried.

ACCIDENT No. 22.—Charles Letcher, driver, aged fifteen years, on July 31, was found dead under a mine wagon, on main entry road, in Lackawannock mine, Mercer county. The boy was hauling coal from four miners on the west side of the shaft, and was making his second trip that morning, but being longer in coming out than usual the other drivers that were hauling from the main body of the workings sent one of their number, Bentley Porterfield, to see what was the cause of his delay, and had only gone about 140 yards from the bottom of the shaft when he found the boy dead beneath the last car on the trip, with the front end of car off the track, and the front axle resting across his breast. Mr. Porterfield was unable to lift the car off the body, and had to return to bottom of shaft and get more help, which was soon secured, and the body speedily released and taken home. As he was only a few yards from the cross-entry in which the four miners were working, it is supposed that he came to his death by trying to get on the coupling between the cars, and had slipped and gone under the car. This is the probable cause, as he had to close the cross-entry door after his trip got through it, and was again getting upon his trip to ride out to bottom of shaft. His light may have gone out at that time.

ACCIDENT No. 24.—Thomas Heaps, miner, aged thirty-eight, was killed instantly by fall of slate, while drawing pillars in Bethel shaft, Mercer county, on September 25, about half past eleven o'clock, P. M. Mr. Heaps had been requested by his partners that were working on the same shift with him to set props to the roof. He failed to do so, but sounded the stone or roof with his pick, and considered it quite safe to work under; however, his judgment was proved to be at fault, as the accident took place soon after. The men were well supplied with props. Heaps was an experienced miner, and always careful about his work. He leaves a wife and three children.

ACCIDENT No. 25.—On the 29th of September, about three o'clock, P. M., John Matheson, miner, was killed instantly by a mass of slate falling from the roof in Clermont mine, McKean county. He and his partner, Andrew

Thyne, had quit work for the day, and Matheson sat down on the side of the road, opposite the innermost end of the pillar, to eat a lunch before going home, and was eating when the stone dropped on his head with fatal results. Andrew Thyne, Alfred Swanson, Peter Lundguist, John Flynn, and John O. Sinburgh were all working near Mr. M. when the accident occurred, and rendered immediate assistance. None of the men knew of the stone being loose as they had all sat under it at different times. The pillars were all taken out of the entry up to the place where the stone fell. All testified that Mr. Matheson was a very careful man about his work. He was forty-one years of age. He leaves a wife and five children.

EXAMINATION OF MINES.

Butler County Mines.

Allegheny mine

Is located near Hilliards, and has three openings—main slope, air-shaft, and a drift, which is being used as a traveling-way for the miners going to and returning from their work. The slope is 28 feet area, 33 yards long, and dipping 1 foot in 3 feet. It has a single track, laid with T iron. The hoisting-engine has a 9-inch cylinder and 14-inch stroke, with 2 cylinder boilers for generating steam. The number of miners employed was 65, and 13 other employés. System of working is single-entry, with air-courses being driven parallel to entries and having an area of about 18 feet. The mine is ventilated by a small furnace, (4′×4′.) Depth of air-shaft 50 feet, and 30 feet area. Have a stack 14 feet high. The volume of air measured was 4,500 cubic feet per minute, which was being distributed at face of workings. The mine was in fair condition. Mine operated by the Allegheny Coal Company. Frank Morrison, superintendent; J. H. Lane, mine-boss. Have visited this mine twice during the year.

Gomersal mine,

Which was examined on February 1, is located at Gomersal, and operated by the Mahoning Valley Iron Company, Frank P. Wick, superintendent, and William Ferguson, mining-boss.

There are two openings to the mine. The main drift has a 10-foot spread, 8-foot collar, and 6 feet high. The number of men employed was 117, and were producing 280 tons of coal daily. Mine worked on the single-entry system, and ventilated by a furnace at which I measured 9,700 cubic feet of air passing per minute, but only measured near the face of entries an average of 2,000 cubic feet. The mine was not in as good a condition as it should have been, and I notified the officials of the defects. They report the mine in much better condition now. Mine drained by a syphon pipe 1,200 feet long. Height of coal seam 3 feet. In one or two entries the roads were muddy.

Union Coal and Coke mine.

This is a drift mine with several other openings, and is located at Coaltown. There were employed 114 men. Have in operation 50 bee-hive coke-ovens. The coal is prepared for the ovens by the Wilcox crushing and washing machinery. The mine from the tipple is reached by an inclined plane on a light grade. System of working, single-entry, with a furnace as the ventilating power. I measured at both inlets a volume of air of 9,660 cubic feet per minute, but the average amount for the workings was only 4,800 cubic feet. At the face of two entries the air was defective. More doors were required to be erected to conduct the ventilation to the working places. The officials were notified of the defects, and they have informed me since my visit that two more furnaces have been put in operation, and that the ventilation is now splendid. The drainage was good. The mine is operated by the Union Coal and Coke Company. George G. Stage, superintendent, and James Spears, mining boss.

Barnes' mine

Is located at Harrisville Station, on the S. and A. railroad, and is operated by the Mercer Mining and Manufacturing Company. Richard Lewis, superintendent, and George S. Jenkins, mining boss.

There are several openings to this mine. 75 miners were employed and 18 day men. Had 17 mules hauling in mine. In the main drift the miners were nearly all employed at taking out pillars. In this opening at outlet I measured 6,960 cubic feet of air passing per minute, which were well distributed to where the men were working. The ventilation was produced by the exhaust steam from the pumps. The hauling roads were very long, but were in excellect condition. The general condition of the mine was very good. The Centerville opening had a few men working in it. The ventilation in this opening was not good, owing to no fire being in the basket which is used for ventilating purposes.

Chisholm mine.

This is a new drift which has been opened during the year. There are two openings inclusive of furnace shaft, and are located two and one half miles from Branchton, on the S. and A. railroad. The Mercer Mining and Manufacturing Company is operating the mine. The height of coal tipple is 25 feet. The tipple and mine are connected by an inclined plane about 600 feet long and having an angle of about twelve degrees. 8 cars are let down the plane on each trip by a friction drum 8 feet in diameter. The cable for plane is steel wire one inch in diameter, and the "Barney" that goes in front of each trip on plane has an excellent safety appliance. They are working the Middle Kittanning coal seam. It is 3 feet thick, but thins down to about 2 feet 6 inches. Has a draw slate on top of coal about 4 inches, and has a shale roof and a fire-clay floor about 4 feet thick. The

roof is not strong. Air circulating in workings was 1,785 cubic feet. This amount was by natural ventilation alone. Had a 3′×3′ basket as the ventilating power, but there was no fire in it. Mine in good condition. Richard Lewis, superintendent; David Jenkins, mine boss.

Buckeye mine.

This drift mine has been opened during the year. There are two openings inclusive of furnace shaft, and located about two miles north of Hilliard's. It is operated by the Buckeye Coal Company. Frank Morrison, superintendent; Philip Nicholas, mine boss.

Only 15 men are employed at the mine. Size of drift 8′×6′, and timbers 10 inches square. The thickness of coal seam is from 2 feet 6 inches to 3 feet, and has a sand-rock roof. The floor is fire-clay. Single-entry system of working the mine has been adopted. Average air measurements were about 6,000 cubic feet per minute. Mine well ventilated and drainage good. Have a 4′×4′ furnace for ventilating purposes, with the air shaft about 55 feet deep and 35 feet area.

BEAVER COUNTY MINES.

Davidson mine

Has two openings, and is situated near Beaver Falls, employing about 20 men on an average. The coal is sold to the manufacturers of Beaver Falls, and is hauled in wagons to the iron works from the mine. The size of drift for a distance of one hundred and fifty feet is 11′×6′ 6″. Average amount of air circulating per minute at face of workings was 2,100 cubic feet. Mine ventilated by a small furnace built at bottom of the air stack. Mine in good condition. A. Davidson, operator; D. S. Stinson, mine boss.

Hulmes' mine.

Located at Beaver Falls. Two openings, a drift and furnace shaft. Were employing at time of visit 42 men. Have 3 coke ovens in operation at mine. I found the mine in poor condition. The ventilation was very defective, and I notified the operator (Mr. Hulmes) to have the defects remedied. The mine has changed hands since my visit, and James Clayton is now operating it. I am informed that the mine is now in fair condition. Have a fire on grate bars at bottom of air shaft to produce the ventilation.

Clayton mine,

Located near Beaver Falls, is a drift opening, and was employing at time of visit 21 men. I found the air very defective, and could not take an air measurement in any part of the workings. Their return air course was almost rendered useless by being filled with water in a low part of mine through which the air-way had been driven. I ordered a new air-passage

to be driven and a ventilating furnace to be built, all of which the operator agreed to do before I left the mine. The operator writes me now: "I have made a new air course, furnace, and shaft. 4,000 to 5,000 cubic feet of air pass through entry per minute." As this is a small mine, that amount will be quite sufficient.

State Line mine.

Located near East Palestine, Ohio, and is operated by the State Line Coal Company, John Southerin, superintendent. The mine has two openings a drift, and furnace shaft, employing 115 miners and 17 day men. Were driving five entries. System of working, single entry with air courses. A new furnace has been built during the year. I measured at inlet 15,000 cubic feet of air per minute, and an average of 7,560 cubic feet at face of entries. The mine was in excellent condition at time of visit.

The first opening at this colliery was opened on the Ohio side of the State line, but it has been exhausted with the exception of main entry, which has been driven through the hill, and the present mine is on the Pennsylvania side. The coal is hauled from the mine to the bottom of old slope, and is taken from there to tipple by an endless rope.

Mansfield mine

Is situated at Cannelton, and an excellent seam of cannel coal, seven feet thick, is being mined. It lays in a narrow swamp in which the main entry has been driven over one mile. About 40 men were employed. Built a new furnace $4' \times 3' \times 24'$, and sank a shaft 8 feet deep. This furnace had just been completed at time of my visit, and had no fire in it. Measured 7,560 cubic feet of air at inlet, but was all lost through leakage before it reached the men. They had a common hand-fan going, creating a circulation at face of workings. Measured about 2,500 cubic feet of air at face of workings. The new furnace will probably be large enough to give sufficient ventilation. The drainage of mine is good. J. F. Mansfield, operator, and Conrad Brown, mine boss.

MINES IN CLARION COUNTY.

Long Run mine

Is located two miles west of New Bethlehem, and operated by the North-Western Coal and Iron Company. S. T. Shaffer, superintendent; John Freil, mine boss.

Number of miners employed is 74 men and 6 boys, other employés, 21. The distance from the tipple on the Allegheny Valley railroad, low-grade division, to foot of inclined plane is 3,900 feet, and the coal is hauled this distance by a locomotive. The plane is 2,100 feet long, double track. Height of coal seam mined is from 4 to 7 feet. Measured about 6,000 cubic feet of air per minute circulating through the mine. Natural ventilation. There are several openings to the mine, and found it in fair condition. Visited this mine twice during the year.

Fairmount mine

Was visited twice during the year and found the mine in good condition with the exception of two entries where the air was not pure, but an airway was being driven to connect them, which was about completed at time of visit, and in a few days would be properly ventilated. I measured about 15,000 cubic feet of air per minute circulating near the outlet, and about 12,000 cubic feet through the workings. Had only two entries going. System of working the mine is partly double-headings. About 140 miners were employed and 22 other laborers. The mine is operated by the Fairmount Coal and Iron Company, with S. Shaffer as manager and R. Henry, mine boss.

Church Hill mine

Is not extensive, and only employes 15 men and runs very unsteadily. Two entries were being driven, and were making a new drift opening out of which the coal will be taken after the hauling road outside would be built to it. Mine was in fair condition and measured about 2,000 cubic feet of air circulating. Use a basket furnace to produce the ventilation. The coal has to be hauled from drift to top of inclined plane, a distance of nearly one mile. The tipple is on the Allegheny Valley railroad. George Horner, manager.

Mineral Ridge mines Nos. 1 and 2

Are located on the Allegheny Valley railroad, and are working two seams of coal, (Upper and Lower Kittanning.) 140 men were employed. In No. 1, or the upper mine, where the most men were working, three entries were being driven in which the ventilation was very poor. A ventilating shaft had been sunk previous to my visit, and the company proposed building a substantial furnace. If my recommendations are carried out in building the furnace, they will hereafter have all the ventilation necessary.

In No. 2, or the lower mine, there were only 20 men working. It was in fair condition and measured 4,000 cubic feet of air circulating. This amount was produced by natural means. They have erected five hoppers at tipple for the purpose of coaling the locomotives on the Allegheny Valley railroad. C. W. H. Eicke, manager, and Jacob Rosenhoffer, mine boss.

Sligo Branch mine

Is located at Rimersburg. The number of men employed was 20. Two entries were being driven, and were going to dip of vein. The air was too far from face of entries, and more doors were needed to be erected. There need not be poor ventilation at this mine, as they have a very good furnace for a small mine. I measured an average amount of ventilation circulating of 4,000 cubic feet per minute.

Pine Run mine

Is located on the Allegheny Valley railroad near East Brady, and operated by Stephenson and Mitchell. Thomas Mitchell, superintendent; William Jents, mine boss.

Number of men employed at mine about 100. The average air measurement near face of workings was about 6,000 cubic feet, and near the furnace 12,000 cubic feet per minute. Ventilation was good with the exceptions of two entries, but would soon be remedied on the completion of an air course that was being driven. Drainage and roads were in excellent condition.

Hillville and New Catfish mines.

The Hillville mine runs with 20 men. The miners were all working in main entry in which the air travels. As the mine is aired naturally, at the time of my visit the air was not very strong, in other respects the mine was in excellent condition. The Catfish mine has run very unsteadily during the year, and while running few men were employed. There were only 12 men working at time of visit. The air of mine was pure, although weak. Drainage and roads in good condition. Was at these two mines twice this year. Mines are located on the Allegheny Valley railroad. L. S. Singley, superintendent, and operated by the Pittsburgh Coal and Mining Company.

Hardscrable mine

Is located at East Brady, on the Allegheny Valley railroad, and were employing a full force of men, 108 miners and 18 other employés. This is one of the large mines that is aired by natural means, and the ventilation is always better on other days of the week than the one on which the inspector makes his examination, but the fact is, such a mine cannot be ventilated naturally. In one part of the workings the ventilation was good, and in another poor. Measured 4,900 cubic feet of air circulating. Notified the agent of the defective ventilation. The mine in other respects was in fair condition. Operator, G. A. Grow, with C. F. Hartwell, superintendent; Andrew Fleming, mine boss.

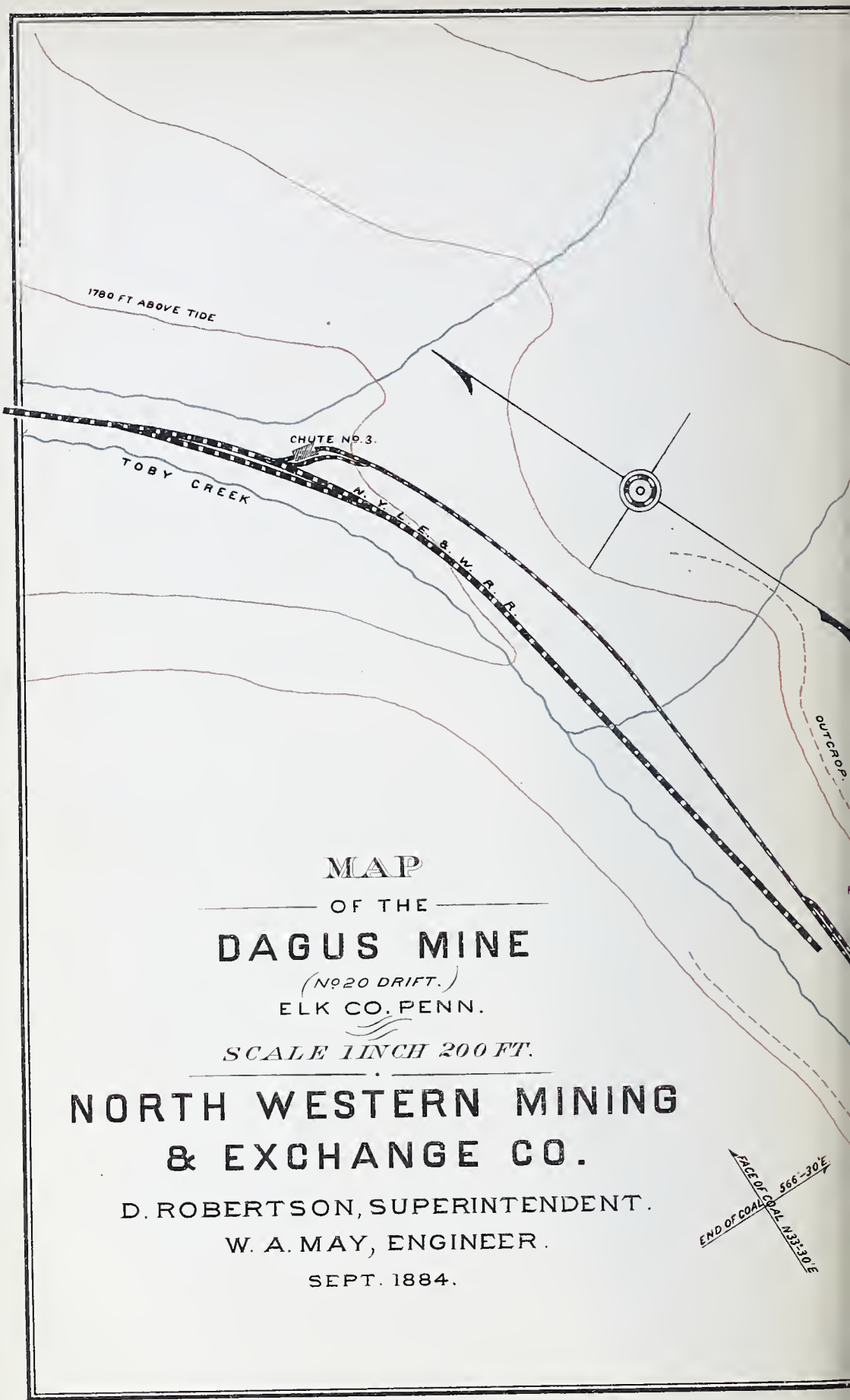
ELK COUNTY MINES.

St. Mary's mine

Is operated by the St. Mary's Coal Company. Joseph Eddy, mine boss. Mine was running with 60 miners and 24 day men. Air near the furnace was 8,880 cubic feet per minute, and average face of headings was 2,200 cubic feet per minute. Drainage good. Mine in excellent condition.

Cascade mines.

Located near St. Mary's, and operated by Kaul & Hall. They employ about 70 men.



MAP

OF THE

DAGUS MINE

(No 20 DRIFT.)

ELK CO. PENN.

SCALE 1 INCH 200 FT.

NORTH WESTERN MINING & EXCHANGE CO.

D. ROBERTSON, SUPERINTENDENT.

W. A. MAY, ENGINEER.

SEPT. 1884.

1920 FT. ABOVE TIDE
OVERCAST
OVERCAST
OVERCAST
OVERCAST
OVERCAST
No. 20 DRIFT.

Found the mines up to the requirements of ventilation act. The work being done in Nos. 1 and 2 was pillar drawing, and the mines will soon be exhausted. They were driving a tunnel through the front hill to another coal territory, which will likely be the main drift opening in the future.

Bucktail mine

Is located at Rasselas, and operated by the N. W. M. and Exchange Company. David Robertson, superintendent; W. H. Harris, mine boss.

A new drift opening has been driven into the coal, and will serve for a water course, and coal will also be taken out of it. Amount of air circulating near furnace was 7,350 cubic feet per minute, and measurement at face of main entry was 3,780 cubic feet. At face of two of the cross entries there was not much current, and in these two entries the roads were somewhat muddy. Mine boss promised to have the defects remedied. Mine generally in good condition.

Eureka Slope

Is located at Dagus mines, and operated by Daniel Eldridge. Mine boss, Patrick Fleming.

The mine was not running steadily, and was only giving employment to 40 men. Average air measurement at inlet and outlet 8,600 cubic feet per minute, and the average amount of air at the face of the three headings was 2,470 cubic feet. One of the headings was a little muddy, otherwise the mine was in good condition.

Dagus mines

Are operated by the N. W. M. and Exchange Company, and David Robertson, superintendent.

During my term of office, I have had no reason to complain of the ventilation or the general condition of the mines. It has been the aim of the officials to have their mines operated in compliance with the requirements of the mining act. About one half of the number of this company's mines have not been in active operation during the year, owing to the depressed condition of the coal trade.

Mr. Wentworth, assistant engineer, has kindly furnished me with a drawing of No. 20 drift, showing methods of working, ventilation, over-casts, &c. No. 20 drift is ventilated by a furnace, and measured 16,000 cubic feet of air circulating per minute, and employing in this mine 54 men. The method of dividing the air current and using "over-casts" instead of doors should be adopted wherever practicable.

The new slope is now in operation, and the heavy expense of bringing the coal over the ridge to tipple by the use of inclined planes has been overcome. Visited these mines twice this year.

JEFFERSON COUNTY MINES.

Walston mines Nos. 1 and 2.

These mines were visited twice this year. They are located near Punxsutawney, and operated by the Rochester and Pittsburgh Coal and Iron Company. John McLeavy, superintendent, and William Landy, mine boss.

No. 1 mine was not in operation at the time of either of my visits, but No. 2 was running nearly steadily, with 170 miners and about 18 other employés. Both drifts are double, and the system of working double heading, and were driving six of them in No. 2 drift. This mine is ventilated by a Murphy fan eight feet in diameter. No. 1 has a similar fan. I measured 51,900 cubic feet of air per minute at inlet, and the average at face of the six headings was 22,700 cubic feet of air per minute, with the fan running at one hundred and sixty-eight revolutions, and forcing the air into the mine. Thickness of pillars between parallel headings is 30 feet. The mine is in splendid condition. They are working the Lower Freeport coal seam, and is about 6 feet thick. Have built 100 bee-hive coke ovens, and coke the slack as it comes from the mines. The quality of the coke made is first class. With the present plants at these two mines, over 2,000 tons of coal could be shipped daily.

Pleasant Valley mine

Has been put in operation this year. It is located at Reynoldsville, and operated by the Hamilton Coal Company. Thomas E. Evans, superintendent.

They began shipping coal by railroad on March 1. The mine from the tipple is reached by an inclined plane about 450 feet long, and on an angle of fifteen degrees. Two wagons with the "Barney" are lowered at each trip by means of a friction drum 5 feet in diameter. The cable is of steel wire $1\frac{1}{8}$ inches in diameter. The tipple is 27 feet above the bed of railroad, and on the chute there is a coal conveyor or "Billy Fairplay" for regulating the velocity of the coal into the weighing pan. Height of coal seam is 5′ 2″, and system of working, single entry with air courses. The ventilating power is a furnace 6′ 4″ wide, with 4′ 5″ above grate bars, and arch 13′ long. Depth of air shaft 76 feet, and an additional stack of 22 feet. The mine has been started right, and was up to the requirements of the mining act.

Hamilton mine

Is located at Reynoldsville, and operated by the Hamilton Coal Company. Thomas E. Evans, superintendent.

I found the mine well ventilated, and an average amount of air at inlet and outlet of about 10,000 cubic feet per minute, and an average of about 5,000 cubic feet at face of workings. The drainage was good, and the mine

in a safe and healthy condition. Owing to the depressed condition of the coal trade the mine has been operated very unsteadily this year.

Soldier Run mine

Is located at Reynoldsville, and operated by Powers, Brown & Co. B. J. Morris, mine boss.

The mine was fairly ventilated. The average amount of air at inlet and outlet was about 12,000 cubic feet per minute, and at face of some of the headings 4,000 cubic feet was circulating. At face of one of the main headings the air was weak. Mine ventilated by furnace, and, as a whole, the ventilation was good. Drainage was also good.

Sprague mine

Was in excellent condition. Had about 16,000 cubic feet of air circulating through the workings. Measured 8,000 cubic feet of air at face of main heading. Mine up to the requirements of the ventilation act. Number of men employed about 120. Mine is operated by Powers, Brown & Co. James A. Powers, superintendent; Richard Smith, mine boss.

Beechtree mine.

No. 1 mine has not been operated this year. Any work that has been done has been at No. 2. There were 110 miners employed. The mine is ventilated by a six-foot Murphy fan, and was producing about 20,000 cubic feet of air, and about 8,000 cubic feet circulating at face of heading. Mine, as a whole, was in excellent condition. The Rochester and Pittsburgh Coal and Iron Company operates the mine. John H. Bell, superintendent, and William Ward, mine boss.

LAWRENCE COUNTY MINES.

Penn mine

Has been running very unsteadily lately. Number of employés, 42. The ventilation was not as good as it should have been. The quantity of air at inlet and outlet (5,320 cubic feet) was sufficient to ventilate the mine, but only measured 600 cubic feet at face of workings; however, the furnace fire was very low. Size of furnace is $4' \times 2'\ 9''$, which is rather small. More attention is needed in conducting the ventilation to face of workings.

Beaver mine

Operated by Lee & Patterson. Had been idle for four months previous to my visit owing to a difference between the operators and miners relative to the price to be paid for digging; however, they were started to work with a force of 39 men. Average amount of ventilation at inlet and outlet was 8,500 cubic feet per minute. At face of headings the average was about 2,000 cubic feet. The mine was in fair condition, but had not had time to get all the damage done to mine repaired since the strike.

Clinton mine,

Like that of Beaver, had been idle from same cause, but had commeneed work again. About 60 men were employed. Measured about 7,000 eubie feet of air circulating in the workings. In one of the drifts ("Red Bank") the air was not up to the head of the workings. More doors were needed on rooms to conduct air eurrent properly to the working plaees. They were preparing to build a new furnace in a better location in the main drift. If the furnace be built, there should be good ventilation. The roads were in better condition than they had been formerly. Clinton Coal Company operates the mine.

Pearson Shaft

Is not extensive, and employs about 30 men only. This shaft will soon be exhausted, but the eompany is sinking another to obtain a few acres of eoal. Measured at inlet and outlet an average of 2,900 cubie feet of air, but not well distributed to faee of workings.

Benham mine.

Located at Clinton, Beaver county; is operatedby Seott & Co. L. S. Hoyt, superintendent; Christopher Haswell, mine boss.

The mine had been idle for four months previous to my visit, but had again started to work with about 40 men. This is an old mine, and the air has a long distance to travel. Although 7,000 eubic feet of air was the average quantity at inlet and outlet, there was only an average quantity at face of headings of 750 cubic feet. I recommended the building of a larger furnace or the sinking of an air shaft at face of workings. The entry roads near the workings were wet. These defects were to be remedied.

MERCER COUNTY MINES.

Neshannock mine

Was visited twiee this year. On the first visit, the ventilation was defective. I made reeommendations for its improvement. On my seeond visit I measured an average quantity of air at inlet and outlet of 4,000 cubic feet per minute; at face of main heading, 1,100 cubic feet per minute. The mine in other respects had been much improved. Mine operated by the Neshannock Coal Company, and employing 60 employés. Exhaust steam the ventilating power.

Black Diamond mine

Is a shaft opening, employing about 30 men, and located near Grove City. The shaft is 91 feet deep, and size 14′ 6″×7′ 6″ The second opening, a shaft 6′ × 8′ and 59′ feet deep, has been sunk lately, and a eonvenient stair has been put into it to be used by the men in gaining ingress and egress to the mine. The maehinery at mine consists of a horizontal engine with a fourteen-ineh cylinder, four boilers for generating steam, and

two Cameron steam pumps used for draining the mine. System of working adopted is that of single entries with air courses. Were driving four entries at time of visit. Height of coal seam about 4′ 6″, with a rock roof and slate bottom. The quantity of air at inlet was about 10,000 cubic feet and well distributed to the workings. Mine in good condition. Visited this mine twice during the year. Operators, Filer, Sutliff & Co; and Henry Filer, mine boss.

Trout mine

Is a shaft opening, operated by Trout, Carnes & Co. Henry Filer, mine boss.

Mine is located near Grove City, and gives employment to about 22 employés. Size of shaft 16′ 6″ × 7′ 6″ and 72 feet. Hoisting engine, 35 horse power. Two Cameron steam pumps are used for draining the mine. Height of coal seam is about 4′ 6″, and has a rock roof and slate bottom. System of working is single entry. Ventilation produced by exhaust steam from the pumps. Measured 5,000 cubic feet of air being circulated throughout the mine. Ventilation and drainage excellent.

Spears' shaft

Is located near Grove City, and operated by the Pine Grove Coal Company. James Spears, mine boss.

Number of employés about 20. The mine has been running very unsteadily during the year. The ventilation was good, but the workings were not far advanced. Part of the mine was wet overhead, but will certainly get drier as the workings become more extensive. Height of coal seam is about 4′ 6″.

Lackawannock shaft

Is located near Greenfield, and operated by the Pierce Coal Company, Limited. Archy McIntyre, mining boss.

About 115 miners were employed, but work very unsteadily. Measured about 10,000 cubic feet at inlet and outlet, and an average, at the face of headings, of 2,600 cubic feet. Mine drainage good. Made two visits to this mine this year.

Chestnut Ridge shaft

Is operated by Westerman, Filer & Co. John Bowie, mine boss.

About 40 men were employed in the mine. Although there was a sufficient quantity of air going into and out of mine, there was very little of it at face of workings. The officers promised to have the defects remedied. The stoppings and doors for guiding the air to workings need more attention. Ventilating power is exhaust steam.

Sharon or Wheeler shaft

Was visited on March 20, and found in bad condition, both as regards ven-

tilation and drainage. I notified the company of the defects and they promised to put the mine in good condition. I again examined the mine and found it in much better condition. An air shaft had been sunk near the face of workings and the drainage was much improved. Ventilation produced by exhaust steam put into the air shaft from the pumps, but, on my second visit, the mine was not running, consequently there was no steam in the air shaft. I measured it, however; 2,700 cubic feet of air per minute circulating.

Ormsby slope

Is located near Jackson Center, and operated by L. M. Ormsby & Co., Limited. L. M. Ormsby, superintendent; James Beveridge, mine boss.

Number of employés, about 25. Length of slope is 103 feet and dipping 1′ in 4′. The distance from knuckle of platform to mouth of slope is 80 feet. System of working is single entry with air courses. Ventilation produced by a fan ten feet in diameter. Measured 8,515 cubic feet of air circulating through the workings with the fan running at 85 revolutions. The hoisting engine is 12″×26″ with one boiler 30 feet long and 40 inches diameter. The height of coal seam is from 3′ to 4′, and have to leave, in many parts of the mine, a few inches of coal for a roof, as the slate is very soft. The mine is wet overhead, but otherwise the mine is in good condition.

Hall shaft.

This is a shaft opening 91 feet deep, and size 9′×16′. Operators, Westerman, Filer & Co. Enoch Filer, superintendent; Charles Whitlatch, mine-boss.

Commenced to ship coal March 15 of this year. Number of employés, 28. Have a hoisting engine 12″×24″, with four boilers 30 feet long and 3 feet in diameter. Hoisting ropes, one inch steel wire. System of working is single entry with air courses. Four entries were being driven. Height of coal, about 4′ 9″, with slate roof. Ventilation produced by exhaust steam from the pumps that are used for draining the mine. There is a very large volume of water produced at this mine. The air was good, but the workings were not far advanced. The second opening is just about completed. The size of it is 8′×6′.

Enterprise mine.

This is a slope opening operated by Filer, Westerman & Co. Enoch Filer, superintendent; Moses Jenkins, mine boss.

Have sunk a shaft 45 feet deep and size 5′×6′, which is being used as a traveling way. A new stack has been built to furnace shaft. Air measurement at main inlet was about 3,000 cubic feet, and average measurement at face of the entries was 1,250 cubic feet per minute. Air measurement at furnace (basket) was 11,000 cubic feet, but much of this quantity was coming from openings not in direct communication with the workings. On one

part of the main entry road, the water was on the rails, but the company was cutting a drain to relieve it. The mine employs 65 men.

Ormsby shaft

Is located near Jackson Center, and operated by the Ormsby Coal Co., Limited. Richard Sneddon, manager.

This mine was in fair condition. Air measurement at outlet was 19,000 cubic feet per minute, and the average ventilation, near face of entries, was 3,880 cubic feet. Ventilation was produced by an 8-foot diameter fan. Second opening not in good condition, but Manager Sneddon promises to put it in better condition.

Atlantic slope.

Located near Sharon and operated by Dunham, Roberts & Co. Was not in very good condition at time of visit, but the mine would be exhausted in three or four months. They were employing 23 men.

Rankin shaft.

Located near Sharon and operated by John F. Filer & Co. Gilfrad Wooten, mine boss.

The pillars on the north side of shaft have been drawn, and the south-side workings have been holed through on the old workings of another exhausted mine. The mine was not in good condition owing to the workings being flooded by water from the old Rankin mine. Mine will soon be exhausted. Visited mine twice during the year.

Stoneboro' mines

Are both slope-openings located at Stoneboro' and operated by Mercer Coal and Iron Co.

No. 2 mine had about 150 miners working in it and about 40 other employés. The average air measurement at inlet and outlet was 12,000 cubic feet, but, on an average, only 1,570 cubic feet reached the face of entries. The air was defective, and I requested that an air shaft be sunk at face of working, which has been done, and have no doubt but that the ventilation has been greatly improved. The mine is ventilated by a good furnace.

No. 3 mine employs about 90 employés. Ventilation is produced by a fan 10 feet in diameter and giving 13,000 cubic feet of air per minute with fan running at 102 revolutions. The amount of air going to the workings was 8,400 cubic feet. A few more doors were needed to be erected to guide the current to face of workings. Mine somewhat wet.

New Virginia shaft

Is located at New Virginia and operated by New Virginia Coal Co. S. Perkins, superintendent, and James Young, mine boss.

Were driving two entries, one of them being driven to test the coal. At

the face of this entry the air was not good, but near the face of the other I measured 3,520 cubic feet passing per minute, and at outlet 5,700 cubic feet. Number of employés, 65. Mine in fair working condition.

Pardoe mine

Is a drift opening located at Pardoe and operated by the Mercer Mining and Manufacturing Co. Richard Lewis, superintendent.

Employing 60 miners. Mine is ventilated by an 8-foot fan. Amount of ventilation at inlet was 12,000 cubic feet per minute, and average at face of working was 2,310 cubic feet. The mine was in fair condition.

Instanter mines, Nos. 1 and 2.

These mines are located in McKean county, and operated by the Buffalo Coal Co. J. H. Tate, superintendent; Robert Dick, mine boss.

At No. 1 mine the ventilation was good. The average amount of air at inlet and outlet was 8,650 cubic feet per minute, and at face of workings an average of 2,800 cubic feet. In No. 2, 5,000 cubic feet of air were being circulated. Both mines were in good working condition.

There is only pillar work in the Clermont mine, and was in good condition.

Maple Grove mine

Is located one mile from Raymilton, Venango county, and operated by S. P. McCalmont; Charles Kinney, superintendent.

Number of employés, 14. The work being done in mine by the miners was drawing pillars, but had new work opened out if needed. Found sufficient ventilation and measured 4,400 cubic feet of air distributed to face of workings. Mine was in good condition.

Mines Exhausted During the Year.

Spearman shaft, located in Mercer county, and was operated by the Hickory Coal Co. Wise shaft No. 2, located in Mercer county, and operated by the Snyder Coal Co. Cranberry mine, located in Venango county, and operated by the R. W. Coal and Railroad Co. Washington mine, located in Jefferson county, and operated by Frank Williams. Bethel shaft No. 2, located in Mercer county, and was operated by the Bethel Coal Co.

Mines Opened During the Year.

Gomersal, located in Butler county, and operated by the Mahoning Valley Iron Co. Chisholm mine, located in Butler county, and operated by the Mercer Mining and Manufacturing Co. Buckeye mine, located in Butler county, and operated by the Buckeye Coal Co. Pleasant Valley mine, located in Jefferson county, and operated by the Hamilton Coal Co. Hall shaft, located in Mercer county, and operated by Westerman, Filer & Co.

EXTRACTS FROM THE MINING LAW.

1. No person shall be allowed to work in any mine, or part of a mine, unless there be communication with at least two openings, separated by natural strata of not less than 150 feet in breadth, if the mine be worked by shaft or slope, and of not less than 24 feet if the mine be worked by drift, unless for the purpose of effecting communication between two such openings, when at any one time not more than 20 persons shall be employed.

2. In the case of furnace ventilation being used before the second opening is reached, the furnace shall not be placed within 40 feet of the foot of the shaft or slope, and shall be well secured from danger of fire.

3. If the opening is a slope, it shall be provided with safe and available traveling-ways, providing another opening is not set apart exclusively for purposes of ingress and egress.

4. Not more than 6 persons shall be lowered or hoisted at any one time, at any one shaft or slope; and only sober, competent, and experienced engineers shall be employed.

5. The ventilation of the mine shall afford 100 cubic feet of fresh air per minute for each person employed therein.

6. The mine boss shall keep a careful watch over the ventilating apparatus, airways, traveling-ways, pumps, pump timbers and drainage; and shall see that all loose coal, slate, and rock overhead are carefully secured against falling in or upon the traveling-ways, and that sufficient timbers are furnished of suitable length and sizes for the places where they are to be used, and placed in the working places of the miners. It shall also be the duty of the mine boss to measure the air current at least once a week at the outlet and inlet, and at or near the face of the headings, and keep a record of such measurements and report the same to the inspector of his district once in every month.

7. The doors used in assisting or directing the ventilation of the mine shall be so hung and adjusted that they will close themselves, and so arranged that they cannot be left standing open. Any miner, workman or other person who shall intentionally injure any shaft, lamp, instrument, air course or brattice, or obstruct or throw open airways, or carry lighted pipes or matches into places that are worked by safety lamps, or handle or disturb any part of the machinery, or open a door and not close it again, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or do any other act whereby the lives or the health of persons or the security of the miners or the machinery is endangered, shall be deemed guilty of a misdemeanor, and upon conviction, punishable by fine and imprisonment.

8. All machinery about mines shall be properly fenced off; and the top of each shaft, and the entrance of every abandoned slope, and air or other shafts, shall be securely fenced off.

9. And it shall also be the duty of the mine boss to see that proper cut-

throughs are made at least every thirty yards in the room pillars of the miners' places; and that on all traveling roads, holes for shelter, of sufficient size, to be made at least every thirty yards, and to be kept whitewashed.

10. Bore holes shall be kept not less than 12 feet in advance of the face of every working place, and when necessary, on the sides, if the same is driven toward and in dangerous proximity to an abandoned mine suspected of containing inflammable gases, or which is inundated with water.

11. All extensions of working places and air courses shall be surveyed by a competent mining engineer at least every six months, and the direction of the air current accurately placed on the map or plan—said map to be kept at the mine for inspection by the inspectors.

12. Whenever, by reason of any explosion or other accident in any bituminous coal mine, or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such mine or colliery to give notice thereof forthwith to the inspector of the district, and, if any person is killed thereby, to the coroner of the county, who shall give due notice of the inquest to be held.

GENERAL RULES OF THE COMPANY.

Duties of the Mine Boss.

1. It shall be the duty of the mine boss to direct and supervise the whole of the inside work of the mine; to instruct the workmen in their several duties, and to see that all the rules prescribed for each class of workmen under his charge are implicitly obeyed.

2. To visit all working places in the mine as often as he can and thoroughly examine them, particularly with reference to his duties as prescribed in extracts 5, 6, and 9 of the mining law, and generally to exercise that direction over his workmen and work as required by the directions of the mining law.

3. To practice due economy in the use of all supplies for the mine and prevent loss or waste of the same.

4. To keep all headings, airways, and rooms as straight as possible, and pillars of uniform and sufficient thickness, and, where necessary, to see that sights to the workmen are furnished.

5. To have all stoppings along airways properly built and kept free from leaks, etc.

6. To provide that all main airways and headings for the passage of the ventilating currents contain an area of forty square feet, cross headlings thirty-five square feet, and return airways at least twenty-four square feet, where practicable, that they be made as nearly square as possible, and that every ventilating passage be at all times kept claar of every impediment to the free circulation of the air.

7. To order immediately the securing of a dangerous working place, either by taking down or propping the loose material, and, if necessary, to stop

the mining of coal in such place until it is made safe and secure; and he must see that every order he gives in such case is obeyed immediately.

8. To see that the doors along the air passages are not opened oftener than is necessary, and that they are closed every evening after cessation of work.

9. To measure the air current properly and report the measurements to the mine inspector, as required by extract 6 of the mining law.

10. To see that all roads are kept properly cleaned and drained and in a safe condition for horses and mules, and that the miners in headings lay a proper and complete road, as they progress, when supplied with the material.

11. To see that horses or mules under his charge are not overworked or unnecessarily whipped or abused by the drivers, nor driven up steep grades without occasional rests, and that drivers are at the stables early enough in the morning to take care of their mules, etc., before beginning work at the appointed time.

12. He shall not allow door-boys to leave their doors to ride with the driver.

13. He shall see that all miners undermine their coal properly before blasting down, and that no coal or material is lost by premature or improper drawing of pillars.

14. He shall discharge all men under his charge who make a habit of neglecting their work, being absent after pay-day and at the beginning of the month.

15. He shall be particular in seeing that props for the support of the roof are supplied to his men at all times, and that they are properly used where needed and not lost by being left in the ditches or gob, or wasted in any other way.

Duties of Outside Foreman.

16. It shall be the duty of the outside foreman, generally, to direct and supervise all the outside work to the colliery, to instruct his workmen in their several duties, and to see that all rules prescribed for their government are obeyed.

17. He shall attend to the management and care of machinery and boilers inside and outside, seeing that the latter are supplied with pure water, and are cleaned and inspected at proper intervals.

18. That hoisting ropes are not used when in a dangerous condition, and are preserved from chafing, and tarred at frequent intervals.

19. That all new ropes are oiled and tarred before being put into use.

20. He shall see that mine props, of a suitable length, are delivered at every mine mouth, handy for loading on cars, and that mine rails, lumber and other materials, are supplied as needed; at the same time he shall exercise an economical care in the use of all supplies and materials, and allow no waste of the same.

21. All outside employés, stock, tools, and materials are in his charge.

DUTIES OF THE CHUTE BOSS.

22. He shall have general charge of the weighmen, dumpers, loaders, and teamsters hauling coal; and shall see that the coal is properly handled on the chute, and loaded in the cars.

23. He shall see that the coal is received from the miner in proper condition, free from sulphur, slate, rock, or other unmerchantable materials; and that miners who send out other than salable coal, are either docked or stopped, or both.

24. He shall supervise the weighing of the coal, and see that the empty cars are weighed at frequent intervals; and that just weight is taken and allowed in all cases. He shall also give due and prompt attention to all inquiries from miners, after lost cars, etc.

25. He must report to the superintendent, immediately, any miner who sends out an inordinate amount of sulphur or dirt in his coal.

DUTIES OF THE MINER.

26. Every miner must examine his working place immediately after entering it in the morning, and make it perfectly safe before he begins his work. He shall make a like examination and secure it properly and safely before quitting it.

27. He shall keep his working place at all times well propped, bar down all doubtful or dangerous pieces of loose material, and obey an order from the mine boss in respect to these matters immediately.

28. It shall be the duty of every miner to undermine his coal at least three feet before blasting or wedging down, and to use every precaution toward sending out his coal as free from sulphur, slack, clay, rock, or other impurities, as possible.

29. He shall use great caution in the care and handling of his powder, and when making a cartridge, he shall not keep his lamp on his head nor have a lighted pipe or cigar in his mouth. He shall place his lamp at least four feet away from him, and at a point at which the air would carry a spark away from him.

30. When charging a hole for a blast, if his cartridge sticks, he must remove it carefully and reduce its size or enlarge the hole so that he may push it in easily. He must not ram or force the cartridge with a drill.

31. In driving cross-cuts through pillars, before firing his blast the miner must give ample warning to the workmen in the room toward which he is working, so that they may find a place of safety.

32. He must be careful not to return to his working place too soon when a shot seems to have missed fire.

33. After a shot has been fired, the miner must exercise great care in examining the roof and coal, and securing them safely before resuming work.

34. Every miner shall use great care in running his car to the heading, so that no injury may occur by runaway.

35. He shall not absent himself from his work after pay-day, or at the beginning of the month, or at any other time, (without notifying the mine boss,) unless through sickness. Men who make a habit of being absent at these times are subject to discharge.

36. It is expected that the miner, as well as all other employés, shall, in his work and conduct, look to the interest of his employers as well as his own.

Duties of Engineers.

37. It shall be the duty of the engineer to keep a careful watch over his engine and machinery, pumps, boilers, etc., to see that the boilers are properly supplied with water, and that the steam pressure does not exceed, at any time, the limit allowed by the foreman or superintendent. He shall exercise particular care and caution in handling his engine in hoisting or lowering from any shaft or slope, when men are ascending or descending.

38. The engineer in charge of any ventilating fan must keep it running at such speed as the foreman or mine boss shall direct, when the mine is idle, as well as when being worked, and upon no account shall he slacken its speed, except by proper direction. If repairs to the fan or machinery become necessary, he must give timely notice to the foreman or mine boss, and await his order before stopping it.

39. Engineers shall not allow persons to loiter in the engine room ; and they must not hold communication with any one while in the act of handling their engines. They will also keep a strict watch over the fireman, and see that he performs his duties faithfully.

Duties of the Barn Boss.

40. It shall be the duty of the barn boss or stableman to take care of the mine stock generally, and to see that all the animals are fed, watered, and attended to in a proper manner.

41. He shall keep a careful record of the amount of oats, feed, and hay fed daily, and report to the superintendent immediately any waste or loss of same.

42. He shall examine the animals daily, as they come from work, and report any hurt or damaged.

43. He shall not allow any animal to be ill-treated or over-worked, or to leave the barn when unfit for work, and he shall report such to the foreman immediately.

44. He must be particular to dress daily all animals suffering from sore shoulders, cuts, or bruises, and except for such complaints he will not administer any medicine, unless by special permission of the superintendent or foreman.

Duties of the Driver and Runner.

45. It shall be the duty of the driver to take proper care of his horse or mule, and see that it is properly fed and watered when out of the stable.

46. He must not whip or abuse it unnecessarily, nor allow any other person to do so.

47. He must drive his animal carefully, and when ascending steep grades allow it to rest frequently.

48. When he has occasion to leave it, he must be careful to see that it is left in a safe place, secure from runaway cars or other dangers.

49. No person but the driver will be allowed to take his horse or mule to or from the stable, and while going or returning he must not drive his animal faster than a walk.

50. The runner or driver must exercise great care while running or drawing cars over a graded road, and sprag the cars sufficiently to prevent them from running on himself or mule.

51. Any driver who injures a mule through carelessness, or any other unaccountable way, will remain idle until his mule is fit for work again.

General Rules.

52. No person, except the driver or runner, is permitted to ride on cars inside the mines

53. The burning of car oil or "black strap," or any oil other than "Miners' Extract No. 1 Oil," is forbidden. Drivers must carry and burn their own oil. Miners are requested to report to the mine boss any stealing or begging oil from a miner, or accepting money from a miner for cars, etc.

54. No person is allowed to work in or pass through or into any heading or tunnel in which a mine locomotive runs.

55. When the mine operations are stopped for a day or part of a day, all foremen will see that day men in their charge stop work, and no one be permitted to work unless specially ordered to do so by the superintendent.

56. No boy under twelve years of age shall be allowed to work in any mine, and before boys are hired proof must be had of their age by certificate or otherwise.

57. Written or printed rules defining the duties of all persons in or about the mines shall be kept posted in a conspicuous place.

58. All persons are forbidden to ride on cars on any slope or plane.

59. Any person who opens a ventilating door must close it properly before leaving it.

60. All employés are required to notify the mine boss promptly of the unsafe condition of a working place, or track, or of damage to doors, brattices, or stoppings, or of obstructions in the air-passage.

These extracts and general rules are for the purpose of emphasizing the directions of the law of the Commonwealth tending to the care and safety of life and property. All persons in the employ of the company are expected to make themselves familiar with them, and must obey them implicitly. Any refusal or omission to do so will be visited by prompt dismissal.

Other special rules not covered by the foregoing, to regulate matters in the conduct of the work or management of the men, will be given by the superintendent or foreman from time to time as circumstances may require.

Approved:

Samuel Hines,
President.

David Robertson,
Superintendent.

January 1, 1884.

TABLE I.—SHOWING LOCATION OF COLLIERIES IN THE THIRD BITUMINOUS MINE DISTRICT.

NAME OF COLLIERY.	Name of Company.	Location—County.	Name of Superintendent.	Post Office Address.
Acbarr, No. 1,	Not running,	Butler.		
Acbarr, No. 2,	Changed hands lately,	do.		
Keystone,	Keystone Coal and Coke Company,	do.	J. G. Ogden,	Roy P. O. Butler county.
Union Coal & Coke Co. mine,	Union Coal and Coke Company,	do.	George G. Stage,	Greenville, Mercer county.
Barnes,	Mercer Mining and Manufacturing Company,	do.	Richard Lewis,	Pardoe, Mercer county.
Chisholm,	Do. do. do. do.	do.	do.	do. do.
Allegheny,	Allegheny Coal Company,	do.	Frank Morrison,	Hilliards, Butler county.
Buckeye,	Buckeye Coal Company,	do.	do.	do. do.
Gomersal,	Mahoning Valley Iron Company,	do.	Frank P. Wiek,	Gomersal, Butler county.
Benham,	Scott & Co.,	Beaver,	L. S. Hoyt,	Rock Point P. O., Beaver county.
Clayton,	William F. Clayton,	do.	William F. Clayton,	Beaver Falls, Beaver county.
Davidsou,	A. Davidson,	do.	A. Davidson,	do. do.
Hulmes,	James Clayton,	do.	James Clayton,	do. do.
Mansfield,	I. F. Mansfield,	do.	I. F. Mansfield,	Cannelton, Beaver county.
State Line,	State Liue Coal Company,	do.	James Southerln,	East Palestine, Ohio.
Church Hill,	Church Hill Coal Company,	Clarion,	George Horner,	Monterey, Clarion county.
Fairmount,	Fairmount Coal and Iron Company,	do.	S. Shaffer,	Fairmount City, Clarion county.
Hardscrabble,	Brady's Bend Mining Company,	do.	C. F. Hartwell,	Oil City, Venango county.
Hillville,	Pittsburgh Coal and Mining Company,	do.	S. L. Singley,	Catfish, Clarion county.
New Catfish,	Do. do. do.	do.	do.	do. do.
Mineral Ridge,	Mineral Ridge Coal Company,	do.	C. W. H. Eicke,	Monterey, Clarion county.
Long Run,	North-Western Coal aud Iron Company,	do.	S. Shaffer,	Fairmount City, Clarion county.
Pine Run,	Stephenson & Mitchell,	do.	Thomas Mitchell,	East Brady, Clarion county.
Red Bank, No. 2,	Not running,	do.		
Sligo Branch,	W. H. Craig and S. Coon,	do.	S. Coon,	Rimersburg, Clarion county.
Cameron,	Cameron Coal Company,	Cameron,	A. C. Dunckiemann,	Cameron, Cameron county.
Dagus Mines, (eighteen,)	N. W. M. aud Exchange Company,	Elk,	David Robertson,	Dagus Mines, Elk county.
Bucktail,	Do. do. do.	do.	do.	do. do.
St. Mary's,	St. Mary's Coal Company,	do.	Joseph Eddy,	St. Mary's, Elk county.
Tanuerdale,	Do. do.	do.	do.	do. do.
Cascade,	Kaul & Hall,	do.	Andrew Kaul,	do. do.
Eureka Slope,	Daniel Eldridge,	do.	Daniel Eldridge,	Scott's Block, Erie, Erie county.
Beechtree, Nos. 1 and 2,	Rochester, Pittsburgh Coal and Iron Co.,	Jefferson,	John H. Bell,	Beechtree P. O., Jefferson county.
Walston Nos. 1 and 2,	Do. do. do.	do.	John McLeavy,	Punxsutawney, Jefferson county.
Hamilton,	Hamilton Coal Company,	do.	Thomas E. Evans,	Reynoldsville, Jefferson county.
Pleasant Valley,	Do. do.	do.	do.	do. do.
Sprague,	Powers, Brown & Co.,	do.	James A. Powers,	do. do.
Soldier Run,	Do. do.	do.	do.	do. do.
Beaver,	Lee & Patterson,	Lawrence,	H. K. Hartsuff,	Rock Point P. O., Beaver county.
Clinton,	Clinton Coal Company,	do.	Alfred Harbison,	do. do.
Penn,	Penn Coal Company,	do.	W. B. Enos,	New Castle, Lawrence county.
Pearson,	New Castle Railroad and Mining Co.,	do.	George Pearson,	do. do.
Clermont,	Buffalo Coal Company,	McKean,	J. H. Tate,	Clermont, McKean county.

Instanter, Nos. 1 and 2,	Buffalo Coal Company,	do.	do.	do. do.
Atlantic,	Dunham, Roberts & Co.,	Mercer,	Warren Dunham,	Sharon, Mercer county.
Bethel,	Bethel Coal Company,	do.	Thomas Bailey,	do. do.
Chestnut Ridge,	Filer, Westerman & Co.,	do.	Enoch Filer,	do. do.
Enterprise,	Filer & Westermau,	do.	do.	do. do.
Hall Shaft,	Do. do.	do.	do.	do. do.
Black Diamond,	Filer, Sutliff & Co.,	do.	do.	do. do.
Trout,	Trout, Carnes & Co.,	do.	do.	do. do.
Hall Slope,	Not running.			
Ormsby Shaft,	Ormsby Coal Company, Limited,	do.	Richard Sneddon,	Jackson Centre, Mercer county.
Hickory Slope,	Hazzard, Wood & Co.,	do.	Frank Hazard,	Mercer, Mercer county.
Ormsby Slope,	L. M. Ormsby & Co., Limited,	do.	L. M. Ormsby,	do. do.
Jackson,	Jackson Coal Company,	do.	William Graham,	Jackson Centre, Mercer county.
Lackawannock,	Pierce Coal Company, Limited,	do.	James Pierce,	Sharpsville, Mercer county.
Neshannock,	Neshannock Coal Company,	do.	John Phillips,	Sharon, Mercer county,
New Virginia,	S. Perkins & Co ,	do.	S. Perkins.	do. do.
Pardoe,	Mercer Mining and Manufacturing Company,	do.	Richard Lewis,	Pardoe, Mercer county.
Rankin,	John F. Filer & Co.,	do.	Enoch Filer,	Sharon, Mercer county.
Stoneboro', No. 2,	Mercer Coal and Iron Company,	do.	Benjamin F. Esgar,	Stoneboro', Mercer county.
Stoneboro', No. 3,	Do. do. do.	do.	Herbert Edwards,	do. do.
Sharon,	Sharon Coal Company, Limited,	do.	Morgan Hollus,	Grove City, Mercer county.
Spears,	Grove City Coal Company,	do.	James Spears,	do. do.
Maple Grove,	S. P. McCalmont,	Venango,	Charles A. Kinney,	Raymilton, Mercer county.

TABLE II.—*A statement showing Characteristics, Number of Employés, Production, &c., of the respective collieries in the Third Bituminous Mine District, for the year 1884.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Allegheny,	Bituminous,	Slope,	1	1	20	2	50	6	5	61	3	2	.	4,482
Barnes,	do.	Drift,	2	1	20	2	74		18	92	16			
Beechtree, No. 2,	do.	Drift,	1	1	20	1	146	14	21	181	12		. .	33,424
Benham,	do.	Drift,					77	9	12	98	7	1	.	9,139
Black Diamond,	do.	Shaft,	2	1	30	4	18	2	7	27	1		. .	500
Bucktail,	do.	Drift,					73	1	15	87	3	1	. .	27 485
Cameron,	do.	Drift,					25	1	5	31	2		1	5 730
Cascade,	do.	Drift,					42	6	9	57	2		1	3 000
Chestnut Ridge,	do.	Shaft,	2	1	35	3	33	4	5	47			.	4,000
Chisholm,	do.	Drift,					29		5	34	3			
Clermont,	do.	Drift,					11	1	3	15	1		.	6,987
Clinton,	do.	Drift,					68	10	16	94	6	3	. .	7,168
Cranberry,	do.	Drift,					32	5	8	45	4	1		2 801
Dagus Slope and Drift,*	do.	Slope and drift,		1	105	2	300	23	16	339	17	1	2	217,026
Enterprise,	do.	Slope,	2	1	15	3	47	5	10	62	4		. .	20,200
Eureka Slope,	do.	Slope,	1	1	45	2	66	9	11	86	4		.	17.934
Fairmount,	do.	Drift,					130	10	10	150	10	3	. .	17,181
Gomersal,	do.	Drift,					68	16	11	95	5			
Hamilton,	do.	Drift,					68	7	10	85	7	2		
Hardscrabble,	do.	Drift,					115	19	10	144	7	1		
Hickory Shaft,	do. (block,)	Shaft,	2	1	40	4	17		8	25	2		.	1,430
Hickory Slope,	do.	Slope,	1	2	60	2	40	9	13	62	4			
Hillville,	do.	Drift,					24	2	1	27	2		.	8 307
Hulmes,	do.	Drift,					22	5	1	28	1		.	11,865
Instanter, No. 1, (old drift.)	do.	Drift,					38	5	6	49	2	1	.	3,690
Instanter, No. 1, (new drift,)	do.	Drift,					42	8	9	59	2	1		25,667
Instanter, No. 2,	do.	Drift,					42	13	12	67	3		. . .	31,948
Lackawannock,	do. (block,)	Shaft,	6	1	40	6	98	14	14	126	8		.	29,559
Long Run,	do.	Drift,					88	8	20	116	6	2		
Mansfield,	do. (cannel,)	Drift,	1				29	1	3	33	2	1		6,700
Maple Grove,	do.	Drift,					32	1	13	46	5	2	1	5 626
Neshannock,	do. (block,)	Shaft,	1	1	32	2	35	3	7	45	2		.	7.379
New Catfish,	do.	Shaft,	1	1	100	2	17	3	1	21	2		. .	5,098
New Virginia,	do.	Shaft,	2	1	40	3	53	18	6	77	3		. . .	8,450

Ormsby,	do.		Shaft,	1	2	70	2	74	12	14	100	5	. .	. .	15 444
Pardoe,	do.		Drift,	2	1	50	3	78		29	107	10	1	1	
Pine Run,	do.		Drift,	. .	. .		. .	98	14	16	128	6	2	.	22 406
Pleasant Valley,	do.		Drift,	1			. .	47	5	4	56	2			
Rankin,	do.	(block,)	Shaft,	3	1	50	5	33	12	12	57	2	.	.	11,280
Red Bank, No. 2,	do.		Drift,	. . .	. . .	. .	. . .	34	16	11	61	3	2	.	3,750
Rimersburg,	do.		Drift,	.	. .	. .	. .	12	2	4	18	2	. .	.	400
Sharon,	do.		Shaft,	2	2	25	2	35	3	7	45	3	. .	. .	2.254
Sligo Branch,	do.		Drift,	.	. .	. .	. .	17	2	3	22	2	. .	.	4,870
Soldier Run,	do.		Drift,	. . .	. . .	. .	. .	110	10	10	130	13			
Sprague,	do.		Drift,	.			. .	95	4	17	116	8	. .	.	3.800
State Line Mine,	do.		Drift,	.	2	24	2	125	8	.	133	7			23,700
St. Mary's,	do.		Drift,	. .	. .		. .	78	10	10	98	3	3	1	31.137
Stoneboro', No. 2,	do.		Slope,	. .	1	50	1	144	25	32	201	16	.	.	48,912
Stoneboro', No. 3,	do.		Slope,	2	2	65	2	61	7	8	76	5	. .	. .	28,975
Trout,	do.		Shaft,	2	1	30	4	15	3	6	24	1	. .	.	500
Union Coal and Coke Mine,	do.		Drift,	. .	.	. .	. .	78	11	14	103	6	1	.	31,596
Washington,	do.		Drift,		. .	.	. .	14	6	3	23	1	.	.	7.349
Wheeler,	do.		Shaft,	2	1	80	2	36	5	13	54	4	. .	. . .	5,267
Wise, No. 2,	do.	(block,)	Shaft,	1	1	40	8	15	. . .	2	17	1			

* The aggregate only of the Dagus mines from 1 to 20, inclusive, is given; in most cases, the returns being sent to the bureau in this shape.

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Third Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Allegheny	Furnace		4′ x4′	4,650	3	3	40	30
Acbarr, No, 2	Furnace		4 x4					
Atlantic	Furnace		4 x3	1,000	2		30	25
Black Diamond	Exhaust steam			10,000	2	3	104	30
Benham	Furuace		6 x3 6′′	9,135	2	4	42	42
Buckeye	Furnace		4 x4 4	6 000	2	3	42	25
Bucktail	Furnace		8 2′′x3 7	7,350	2	2	33	46
Beechtree, No. 1	Fan	6	Not running					
Beechtree, No. 2	Fan	6						
Barnes	Exhaust steam			6 960	2		30	25
Beaver	Furnace		7 x5	10,500	2	3	30	24
Bethel	Exhaust steam			2,000	2		104	24
Chisholm	Natural			2,000	2	3	42	25
Church Hill	Furnace		4 x4	2,000	2	1	42	16
Cameron	Furnace		3 x2 6	2,500	2	1	30	30
Cascade	Furnace		6 x4	5,220	2		42	24
Clinton	Furnace		5 x4	7,000	3	4	60	30
Clermont	Furuace		4 x3	3,000	2		38	29
Chestnut Ridge	Exhaust steam			8.990	2	2	48	30
Dagus, Nos. 2 and 5	Fan	16		14 000	2	3		
Dagus, Nos. 8 and 9	Furnace		6 x4	12,000	2		84	30
Dugus, No. 11	Furnace		4 x3	3.080	2	1	42	30
Dagus, Nos. 13, 14 and 15	Furnace		8 x4 2	15,000	4		90	36
Dagus, No. 20	Furnace		8 x4	14.842	2	3	35	30
Davidson	Furnace		4 x3	2,680	2	2	66	25
Enterprise	Furnace, basket		4 x3	11.000	3	2	42	24
Eureka Slope	Furnace		6 x4	8 760	2	5	42	30
Fairmount	Furuace		6 x3 6	17,600	3	2	44	28
Griffith Slope	Fan	10		8,500	2	2	42	15
Gomersal	Furnace		4 x3	9,750	3	3	54	25
Hall's Shaft	Exhaust steam							
Hall's Slope			Not running					
Hulmes	Furnace		4 x4	2,000	2	2	30	25
Hardscrable	Natural			4,900	3	3	59	40
Hillville	Natural			1.000	2		49	42
Hamilton	Furnace		6 3 x3 3	15 900	3	3	80	30
Hickory	Furnace		4 x3 6					
Instanter, No. 1	Furnace		4 x4	5 050	2		42	24
Instanter, No. 2	Furnace		7 x5	11 800	2	1	38	27
Keystone	Not running.							
Jackson	Furnace		4 9 x4 9					
Lackawannock	Exhaust steam			9,000	2		27	113
Long Run	Natural			5,600	3	1	60	25
Mansfield	Furnace		4 x3 6	2,960	2	1	60	30
Mineral Ridge, Nos. 1 and 2	Natural			4,400	4	2	42	30
Maple Grove	Furnace		6 x4	4,400	2		30	30
New Catfish	Natural			1 000	2		35	42
New Virginia	Exhaust steam			5 700	2	1	104	24
Neshannock	Exhaust steam			4.425	2		112	30
Ormsby	Fan	8		19,000	2	3	91	32
Pardoc	Fan	8		12,000	2	3	40	36
Pine Run	Furnace		6 6 x2 6	12.800	3	4	42	35
Pleasant Valley	Furnace		6 4 x4 5	10,000	2	3	56	30
Penn	Furnace		4 x3 6	5 320	3	2	35	30
Pearson	Exhaust steam			2,990	2	2	42	24
Rankin	Exhaust steam			2,000	2		30	113
Red Bank	Natural		Idle.					
State Line	Furnace		6 x4½	15 050	2	5	40	28
Spears	Exhaust steam			4 000	1	3	104	24
Sligo, Branch	Furuace		6 x3	5 920	3	2	30	20
St. Mary's	Furnace		5 x4 6	8 880	2	3	48	48
Sprague	Furnace		6 x5	21.450	3	2	80	48
Soldier Run	Furnace		6 x3 6	14.575	3		35	35
Stoneboro', No. 2	Furnace		6 6 x4 6	15,450	3	4	91	30

TABLE III--*Continued.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Stoneboro', No. 3,	Fan,	10		13,550	2	3	40	42
Sharon,	Exhaust steam,			4,000	3	2	104	30
Trout,	Exhaust steam,			6,000	1	3	104	15
Tannersdale,	Furnace,		4′ x3′	3,000	2	1	42	24
Walston, No. 1,	Fan,	*8		Idle.				
Walston, No. 2,	Fan,	*8		51,920	3	12	60	40
Union Coal and Coke Mines,	Furnace,		6 x4	8,000	3	4	80	30

* Double.

TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the Third Bituminous Mine District, for the year commencing November 1, 1883, and ending October 31, 1884.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allegheny,	155	4,657	121	1,701	204	4,075	. . .	. . .	. . .	. . .	. . .	. . .	200	6 000	99	7 882	286	6,016
Bucktail,	214	7,054	259	6,986	195	7,020	212	7,010	261	7,047	199	7,155						
Beechtree, No. 1,	. . .						482	28,950	64	3,825	515	36,050						
Beechtree, No. 2,	410	28,700	37	2,235	435	30,450							555	33,300	47	2,337	507	35,525
Benham,	389	16,327			366	15,382	406	17,062	. . .	. . .	375	15,750						
Barnes,							133	16,359	. .	.	95	16 359	135	16,574	. . .	. . .	96	16,554
Clinton,	149	10 620	135	8,100	400	12 000												
Cameron,	140	6 880	147	6 195	149	6,279	140	5 880	147	6,195	142	5,985	140	5 880	147	6 195	142	5,985
Clermont,	125	4,125	135	2,430	325	6,256	115	3,795	115	2,070	325	6,377						
Cranberry,	. .	. . .		. . .	. . .	.	233	4,633	175	1,750	225	1,750	200	4,000	100	2,000	300	3,600
Chestnut Ridge,	. . .	. . .	. .	. . .	. . .	. . .							302	4,235	116	4,891	106	2,922
Dagus, Nos. 1 and 2,	. . .	. . .		. . .	. .	. . .	221	6,704	142	5 913	166	5,934	165					
Dagus, No. 5,	. .	. . .	.	. . .		.	200	6,000	140	3,360	175	5,250						
Dagus, No. 7,	. . .	. . .			. . .	. . .	282	8 460	245	6 210	205	8,200						
Dagus, No. 8,	. . .	. . .		. . .	. .	. . .	71	2 485	62	2,387	75	2,700	139	4 579	101	3,898	160	2 000
Dagus, No. 9,	. . .	. . .		. .		. . .	342	12,330	266	11,726	300	10,800	185	3 885	170	5,100	219	5,000
Dagus, No. 10,	. . .	. . .		. .	. .	.	200	5,581	160	3 500	300	5 000	159	5,239	159	3 810	219	4,844
Dagus, No. 11,	.	. . .	. .	. .	.	. . .	160	5,581	167	4,019	227	4,619	180	6,480	195	4,680	208	6,225
Dagus, No. 13,	.	. . .		.	.	. . .	.	. .		. . .	. . .	. . .	136	4,496	115	4,427	168	2 187
Dagus, No. 14,	.	. . .		.	.	. . .	.	. . .	. .	. . .	. .	. . .	140	5 040	112	4,331	200	7,000
Dagus, No. 15,	.	. . .	. .	. .	.	. . .	. . .	. . .	. .	. . .	.	. .	129	4 635	105	4 042	215	7,940
Dagus, No. 20,	. .	. . .	.										420	15 112	425	11,900	265	12 720
Enterprise,	150	6,900	100	3,000	260	7,500	187	8,625	137	4,125	388	9,687	175	2 800	125	3,750	335	8 375
Eureka Slope,							.				.		205	9 840	143	2,665	205	10,045
Fairmount, No. 2,	. . .						. . .	. .	.	. .	. . .	. . .	426	20, 852	317	15,521	531	19, 125
Hickory Slope,	160	6,240	70	1,750	190	5,510												
Hillville,	175	7,897	172	7,235	178	7,497	168	7,549	163	6 857	172	7,203	172	7,751	169	7,109	175	7,361
Hamilton,							276	11,355	140	15 358	523	16 000	261	11,749	139	15,356	542	16,275
Instanter, No. 1, (old,)	132	2,783	115	4,429	260	7,040	115	4,427	235	4 935	277	5 827	115	4 427	135	2,835	255	6,835
Instanter, No. 1, (new,)	285	5,985	190	6,270	325	7,800	215	7,095	225	4,725	338	8,100						

Instanter, No. 2	235	4 935	222	6,670	242	8. 488	225	6,750	277	5,827	225	7,875	210	6. 930	260	5,460	325	7,800
Lackawannock	252	12, 615	246	12, 281	224	12, 300	177	8. 344	169	8, 438	154	16, 284	357	8, 937	349	8, 719	321	8, 031
Maple Grove	211	6, 338	88	5, 260	376	11, 288	217	6. 516	82	4, 920	389	11 635	194	5, 520	78	4, 665	390	11, 700
Mansfield							100	3. 850	637	3. 625	97	4 436						
New Catfish	156	7, 009	172	7, 235	178	7, 497	187	8, 404	186	7, 812	192	8, 043	182	8 179	178	6. 466	187	7, 864
Nethannock	82	2, 450	48	807	158	2, 690							89	2, 663	79	1, 329	175	2, 975
New Virginia																		
Ormsby													173	18. 000	140	4 300	600	19, 200
Pardoe	457	18, 270	731	18, 275	508	19. 279	454	18. 160	728	18, 156	504	18, 162	457	18 260	729	18 231	507	18, 261
Rankin	295	13, 275	238	8 657	310	11, 797	295	13 275	289	8, 673	311	11, 321	299	13, 432	292	8, 772	312	11, 855
Red Bank	132	1, 587			71	2 315	120	1, 436			70	2, 288						
Sligo Branch	95	3, 420	86	2, 070	154	3, 690							97	2. 925	92	1, 875	147	3. 540
Sprague	129	11. 765	155	14, 880	243	11, 680	133	9. 259	145	13, 873	253	12. 168	147	12, 497	149	14 280	250	12. 000
Stoneboro', No. 2	174	14. 995	162	12 955	600	18. 000	183	16. 988	188	11, 838	584	17, 512	224	15, 304	132	11. 128	587	17. 625
Stoneboro', No. 3	816	20, 406	485	17, 460	486	20, 475	817	20, 438	496	17. 465	502	21. 105	788	19, 687	476	17, 145	505	21, 210
Soldier Run							167	13 395	133	18, 070	462	13 875						
St. Mary's							304	14. 592	304	12. 768	304	14. 592						
State Line							222	15, 788	140	4, 900	439	15, 788						
Washington	105	4, 410	95	4, 275	105	4, 410								15, 953	113	3, 938	443	15, 953
Wise, No. 2					119	2 499					119	2, 809						

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allegheny,	317	6,350	275	11,000	137	6,176	317	6,350	361	8,677	122	6,223	317	6 350	362	8,677	126	6 426
Barnes,	. .	. .	. .	. . . .	. .	. . . .	. .	. . . .	. .	. .	. .	. . . .	132	16,266	. . .	. . . .	95	16,709
Beechtree,	. .	. .	. .	. . . .	. .	. . . .	312	21,875	50	3.000	327	22 925						
Black Diamond,		. . . .	. .	. . . .	. .	. . . .	200	5,000	150	2 500	250	6 000	. . .	. . . .	317	6,340	85	5,460
Bucktail,	. .	. .	. .	. . . .	. .	. .	212	7,225	264	7,122	195	9,165						
Cranberry,	175	3,500	75	1,500	200	2 400												
Cameron,	140	5,880	147	6,195	143	5,985												
Clermont,	117	3,877	112	2.025	305	5,871	115	3,795	115	2,070	300	5,775						
Chestnut Ridge,	193	2,695	222	5,000	110	3 025	185	2 590	114	4,833	97	2,680	179	2 503	143	3,578	97	2 681
Dagus, Nos. 1 and 2,	140	9,120	325	8.450	295	8 260	235	8,460	189	8,116	246	7.880	143	5,160	110	3,900	167	4,167
Dagus, No. 5,	230	8.280	185	7,955	257	7 725	235	8 460	189	8 116	246	7,880	222	8.010	252	6,060	270	8,100
Dagus, No. 8,	154	5 535	117	4,700	240	6 000	150	5.400	126	4,419	227	5 687	160	5 760	129	4,506	248	6,206
Dagus, No. 9,	166	5.486	187	4,500	425	9,562	149	4,909	156	3.750	440	9 900						
Dagus, No. 10,	162	5,362	164	3,930			164	5,304	166	3,990								
Dagus, No. 11,	230	8 280	242	5 820	275	7,700	253	9,120	260	6.240	290	8,120						
Dagus, No. 13,	131	4 725	99	4 050	.		146	5 265	101	4,050		. . . .	137	4 941	102	4,100		
Dagus, No. 14,	139	4,995	102	4.100	376	15,802	139	4 995	97	3 900	396	19,020	140	5 040	89	3,550	391	16,432
Dagus, No. 15,	110	3.960	86	3,450			109	3,915	80	3,200			101	3,645	71	2,850		
Dagus, No. 20,	511	18 405	475	12 810	389	18,660	534	19,115	584	15 759								
Enterprise,	210	9,660	160	4,800	160	9,600	162	4.870	62	1 875	400	6,000	155	4 650	63	1,875	375	11 250
Eureka Slope,	. . .	. . . .		. .			205	9 800	142	3,847	207	10,167	172	8,140	84	2,268	174	8,514
Gomersal,	. . .	. . . .	. .	.	. .	.	216	15 042	234	8.181	408	12,225						
Hardscrabble,	.	. . .	. . .		.	. .	431	18 112	119	5.700	475	26 600						
Hillsville,	157	7,054	155	6.489	160	6 720	153	6 885	151	6,332	155	6,531	146	.	143	. . . .	150	
Hulmes,	350	8,400	150	4,050	400	6,400	83	3 000	52	1,500	375	6,000	100	3 000	50	1,500	160	3,500
Hamilton,	279	11,715	138	15,225	530	15,990	250	12,600	143	15,675	537	16,125	266	11,565	135	14 950	520	15,600
Instanter, No. 1, (old,)	117	4 524	142	2.992	260	7,020	210	6 930	260	5,460	310	7,440						
Instanter, No. 1, (new,)	142	2 992	270	5 670	342	8,220	210	6 950	260	5,460	310	7 440						
Instanter, No. 2,	210	6,300	227	4,777	239	8,383	205	6,150	227	4 777	222	7,788						
Long Run,	. . .	. .	. .		.		75	3,150	50	2,100	100	4,200	356	14,962	350	14,962	. . .	13,912
Maple Grove,	201	6,038	83	4,965	368	11,040												

Mansfield,	93	3,595	587	3 400	100	4.550	90	3 435	575	3 450	100	4 550												
Neshannock,	198	5,342	147	2 507	194	4,844	194	5,229	132	2,252	195	4,675	83	2,500	68	1,162	119	2,016						
New Catfish,	170	7,672	167	7,014	174	7,329	164	7,380	161	6,776	163	6 928	167	7,530	165	6,930	172	7,224						
Ormsby,							500	19 000	200	4 500	400	19,000												
Pine Run,	200	8,400	100	4 200	175	6,025	176	7,402	87	3,675	157	5,512												
Pardoe,	277	12 454	270	8,000	299	11 489	296	13,331	291	8 740	311	11,826	402	18,490	730	18,244	507	18 243						
Rankin,	170	15,488	137	16,200	480	15 360	169	14 155	187	13 176	355	14,200	282	12,679	277	8,297	305	11 595						
Soldier Run,	107	3 225	100	3,000	156	3,750	94	2 812	89	2 662	130	3 120	164	13 807	138	13,200	420	13 340						
Sligo Branch,	115	15,145	77	2.712	115	15.145	456	15,962	78	2,712	448	15,962	85	2 550	80	2 400	120	2. 880						
State Line,	226	17,688	189	14,740	607	18 225	208	15 562	197	15,328	600	18 000	452	16,275	82	2 887	452	16,275						
Stoneboro', No. 2,	817	20,437	496	17,865	502	21.108	860	20,750	512	18 440	512	21,525	188	11,675	139	10,733	572	17 175						
Stoneboro', No. 3,	114	9,576	147	14,080	252	12,080	147	14,470	145	12,000	145	13,920	776	19,405	596	19,080	460	19,320						
Sprague,							800	6 000	150	2,500	300	6 000	112	9,494	109	10,423	126	7,070						
Trout,							105	7,029			192	6,920	377	15,855	272	5,450	148	4.720						
Union C. and C. Mine,	140	9,250			117	7.750	110	4,830	85	3,825	115	4,830	115	4,830	87	3 937	365	15 695						
Washington,	110	4,620	87	3,987	110	4,620	115					4,830	108	3,988	230	3,680	115	4,830						
Wheeler,																	220	3,520						

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allegheny,	322	6,450	312	7,484	139	6,246												
Barnes,	132	16.206			94	16.004												
Bucktail,	204	6,927	246	6 649	187	8,812	212	7,225	284	7,119	195	9,165						
Black Diamond,											200	4,000					250	7,000
Becchtree,													358	31,468	289	20 518	274	29 044
Chestnut Ridge,	186	2,607	80	3,365	99	2,114	187	2 625	97	3 216	100	2,750	118	6,111	46	2,525	207	6,847
Clermont,	105	3,465	262	5,510	262	5,062	110	3,630	105	1,890	255	4,909	105	3 465	112	2,025	207	6,847
Chisholm,													121	3,637	61	1.823	72	1.800
Cascade,													55	4 970	105	5,040	165	9,700
Dagus Slope,							157	6,300	155	4,900	190	5,700	200	8,000	252	6,510	222	7 787
Dagus, No. 5,							202	7,290	195	3,510	230	6,900	207	7,470	237	5 700	225	6,750
Dagus, No. 7,													120	3,040	86	3 622	300	12,000
Dagus, No. 8,							139	4,995	122	4,287	197	4,937	129	3,862	79	2,756		
Dagus, No. 11,							211	6,340	145	5,075	257	8,983	174	5,212	145	5,075	159	5,554
Dagus, No. 13,							130	4.620	103	4 133	180	4.320						
Dagus, No. 20,							482	17 340	392	10,967	352	16,880	454	16 335	420	11,660	340	16 320
Enterprise,	160	4,800	77	2 325	212	5,312							155	4,650	52	1,575	152	4,575
Eureka Slope,	202	9.720	167	4.365	195	9 555	207	9,960	122	3 307	220	9.240						
Fairmount,	355	17 395	260	12,764	451	16,245	401	19 637	325	15 925	474	17,055	424	20,764	319	15,619	550	19 800
Gomersal,													205	14,947	182	6.935	325	11.375
Hulmes,	80	2,392	48	1,504	149	3.347	94	2.812	57	1,795	185	3 700	116	3,480	70	2,205	224	4,775
Hillville,	157	7,054	154	6,457	159	0,699	152	6 829	134	5 628	140	5,940	133	6 007	128	5,386	135	5.680
Hamilton,							262	11,390	135	14,850	517	15,525	268	11.501	138	15 133	522	15.650
Hardscrabble,													362	15 425	117	5,640	389	9,320
Hickory Slope,													130	6.240	70	1,750	190	5 510
Instanter, No. 1,	210	6 930	275	5 775	305	7,320	197	6,517	260	5 460	307	7 386	142	4 702	235	4,935	300	7,200
Instanter, No. 2,	235	7,050	242	5,092	260	9 100	205	6,151	227	4,778	222	7,788	210	6 300	235	4 935	235	8 225
Lackawannock,	480	12,000	459	11,469	414	11.378							409	10.219	400	10 000	370	10,175
Long Run,	55	6,930	55	6.160	70	7,560	100	12,000	100	12,000			150	6 300	150	6 300		
Maple Grove,	236	7,087	86	5.135	431	12,937												
Mansfield,	93	3,594	567	3,400	93	4,246												

New Catfish,	170	7,665	126	5,271	173	7 206	152	6,829	149	6 258	154	6,478	139	6,255	137	5,775	140	5,880
Neshannock,	87	2,600	67	1,133	121	2,132	82	2,475	65	1,105	157	2 842	82	2 475	65	1,105	155	2,750
Ormsby,	185	19,240	100	1 600	580	18 560	175	18,200	57	1,500	600	18,200	175	18,200	100	1.600	530	16 960
Pardoe,	460	18,400	734	18,344	511	18,396	...	...	...	...	...	...	479	19 150	639	19,178	533	19 179
Pleasant Valley,	...	...	...	...	...	...	307	17,220	392	16 485	489	17,106	307	17,163	292	12,250	497	17,033
Rankin,	288	12,949	246	8 391	306	11,639	298	13,432	292	8 773	312	11,853	293	13 410	293	8,760	318	11,837
Sprague,	182	14 185	156	14 930	290	13,920	208	16 225	158	15,120	325	15 600	175	13,635	153	14 673	280	13,440
Sligo Branch,	85	2,550	82	2 475	120	2 880	102	3,075	61	3,637	140	3,360	85	2 550	79	4,901	149	3,570
St. Mary's,	289	13 872	277	11,655	353	12,708	...	...	...	...	...	...	...	...	...	...	...	...
Stoneboro', No. 2,	177	13,797	188	13 875	596	17,887	176	14 954	197	14,185	599	17,962	179	14 195	189	14,010	600	18 000
Stoneboro', No. 3,	777	19,437	490	15,360	465	19,530	830	20,750	436	17,514	513	21,525	830	20,750	560	20,160	512	21,525
State Line,	...	...	...	...	...	...	470	16,450	...	2 975	470	16,450	...	...	...	...	...	...
Soldier Run,	...	...	...	...	...	...	154	12,950	134	12,820	369	13,230	154	12 950	108	10,320	392	12,560
Trout,	...	...	...	...	...	...	...	...	...	...	200	4 000	...	...	...	...	...	...
Union C. and C. Company,	...	...	...	...	...	...	...	...	...	...	201	8 050	...	...	...	...	201	8,672
Washington,	...	...	...	...	...	...	115	4 830	87	3 937	115	4 830	115	4 830	115	4,830	115	4 830

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allegheny,													317	6,350	100	8,009	132	5,932
Bucktall,							212	7,225	204	7,119	195	9,165						
Black Diamond,						7,000							250	5,060			100	4,500
Beechtree, No. 2,	370	34,445	204	8,170	293	26,668	389	36,265	295	11,800	268	28,132	398	36,982	258	19,684	294	30,856
Benham,													377	13,590	182	4,927	337	12,150
Chestnut Ridge,	116	6,009	117	3,964	211	6,971	131	0,527	104	3,765	219	7,219	121	6,890	124	4,463	234	7,714
Clermont,							107	3,547	115	2,070	287	5,534	117	3,877	135	2,430	300	5,775
Clinton,													132	9,500	186	11,175	375	11,250
Dagus Slope,	275	11,000	262	0,300	250	8,750	445	17,800	260	4,680	242	8,487	227	9,100	262	6,300	242	8,488
Dagus, No. 5,	215	7,740	235	5,640	275	6,875	212	7,640	232	4,185	255	0,375	230	8,280	252	6,060	285	7,125
Dagus, No. 7,							99	4,148	80	3,360	137	3,850	122	4,400	84	3,518	354	12,735
Dagus, No. 8,													160	5,760	105	3,675	354	12,735
Dagus, No. 20,	435	15,660	424	11,885	319	15,300	440	15,840	428	11,900	331	15,900	437	15,750	425	11,800	326	16,672
Eureka,	207	9,960	142	3,847	207	2,490	215	10,320	167	4,522	215	10,535						
Enterprise,	165	4,950	77	2,225	157	4,725	162	4,875	62	1,875	375	11,250	165	4,950	62	1,875	175	5,225
Gomersal,													209	15,221	144	5,462	209	15,221
Hillville,													132	5,940	105	4,400	134	5,638
Hamilton,	267	11,498	267	11,407	522	15,675	260	11,440	124	13,665	521	15,650						
Holmes,	84	3,517	61	1,929	187	3,750	98	4,110	93	2,788	220	4,400	57	4,597	73	3,793	246	5,925
Hardscrabble,	169	7,087	105	4,410	169	7,087	262	11,025	100	4,800	212	15,725	417	17,535	217	10,440	469	19,688
Instanter, No. 1,							210	6,930	255	5,355	325	7,900	155	5,115	265	5,565	387	9,300
Instanter, No. 2,							235	7,050	242	5,092	235	8,225	242	7,275	250	5,250	275	9,012
Lackawannock,	430	10,750	422	10,562	391	10,759	439	10,900	427	11,756	395	10,863	415	10,375	404	10,094	384	9,594
Long Run,							292	11,285	292	16,380	292	11,285						
Neshannock,	83	2,500	03	1,076	151	3,033	85	2,550	70	1,190	165	3,300	83	2,500	67	1,147	153	2,760
New Catfish,													146	6,142	144	0,069	150	6,321
Ormsby,							182	16,900	50	1,500	531	10,992						
Pleasant Valley,	312	17,500	897	16,695	492	17,237	307	17,220	392	16,472	487	17,062	307	17,720	390	16,380	492	17,237
Pine Run,	179	7,507	87	3,075	157	5,512												
Rimmersburg,	82	2,475	71	4,470	137	3,300												
Rankin,	298	13,321	293	8,791	313	11,879												

Soldier Run,	144	12,085	138	13,106	387	12,400	137	11,490	136	13,690	355	11,360	142	11,935	128	12,240	377	12,080
Sprague,	191	14,865	157	15,120	300	14,400	151	13,853	155	14,833	238	13,840	161	13,679	155	14,880	234	13,620
St. Mary's,	310	21,500	157	16,625	357	20,020	254	20,300	239	18,769	245	20,090	261	20,920	287	18,687	250	20,500
Stoneman, No. 2,	222	16,000	210	9,915	591	17,738	259	18,660	176	8,115	610	18,300	236	17,172	143	10,530	600	18,000
Stoneman, No. 3,	830	2,750	580	20,760	512	21,521	830	20,750	560	20,160	512	21,525	830	20,750	560	20,160	517	21,735
Sligo Branch,							74	2,655	66	4,137	115	2,760	72	2,175	61	3,665	100	2,400
Sharon,							95	3,444	254	4,064	284	4,224						
Trout,						6,000											150	4,000
Union C. and C. Company,	195	7,253	97	4,111	194	8,137	206	8,660			202	9,620	197	8,259			197	8,259
Wheeler,	87	2,602	212	3,383	212	3,383							178	5,340	346	5,526	346	5,526
Washington,	115	4,830	115	4,830	115	4,830												

TABLE V.—*Giving the name of collieries, their location and name, and thickness of coal seam mined in the Third District.*

NAME OF COLLIERIES.	Shaft, slope or drift.	Location—County.	Thickness of coal-seam mined.	Thickness of top bench of coal seam unmined.	Thickness of bottom bench of coal seam unmined.	Thickness of draw slate.	Kind of roof to coal seam.	Kind of floor to coal coal seam.	Name of coal seam mined.
Acbarr, No. 1,	Slope,	Butler,	2′6″ to 3′				Slate,	Fire-clay,	Middle Kittanning.
Acbarr, No. 2,	Slope,	Do.	2 6 to 3				do.	do.	do.
Keystone,	Drift,	Do.	5 6				do.	do.	Brookville or Clarion.
Union Coal and Coke Mine,	Drift,	Do.	3			3″	do.	do.	Middle Kittanning.
Barnes,	Drift,	Do.	3 to 3 6″			5	Shale,	do.	do.
Chisholm,	Drift,	Do.	2 6 to 3			3	do.	do.	do.
Allegheny,	Slope,	Do.	3 6			2	Slate,	do.	do.
Buckeye,	Drift,	Do.	2 6 to 3			2	do.	do.	do.
Gomersal,	Drift,	Do.	3			4	do.	do.	do.
Benham,	Drift,	Beaver,	3				do.	do.	Darlington.
Clayton,	Drift,	Do.	2 6 to 3				do.	do.	do.
Davidson,	Drift,	Do.	2 6 to 3				do.	do.	do.
Hulmes,	Drift,	Do.	2 6 to 3				do.	do.	do.
State Line,	Drift,	Do.	3 8				do.	do.	Upper Freeport.
Mansfield,	Drift,	Do.	6 to 7				Shale,	Shale,	Darlington, (cannel.)
Church Hill,	Drift,	Clarion,	3			6	Slate,	Fire-clay,	Lower Kittanning.
Hardscrabble,	Drift,	Do.	3 6			6″ to 8	do.	do.	do.
Hillville,	Drift,	Do.	3			4	do.	do.	do.
New Catfish,	Drift,	Do.	3 to 3 6			6	do.	do.	do.
Mineral Ridge,	Drift,	Do.	3			7	do.	do.	do.
Pine Run,	Drift,	Do.	3 6			6 to 8	do.	do.	do.
Sligo Branch,	Drift,	Do.	3 6			6	do.	do.	do.
Long Run	Drift,	Do.	7				Partly sandrock,	do.	Lower Freeport.
Fairmount,	Drift,	Do.	5 to 6				Partly fire-clay,	do.	do.
Cameron,	Drift,	Cameron,	3				Slate,	do.	Mt. Hope, (Kittanning.)
Dagus, No. 2,	Slope,	Elk,	3				do.	do.	Dagus or Lower Kittanning.
Dagus, No. 7,	Drift,	Do.	3				do.	do.	do.
Dagus, No. 9,	Drift.	Do.	3				do.	do.	do.
Dagus, No. 11,	Drift,	Do.	2 6 to 3				do.	do.	do.
Dagus, No. 20,	Drift,	Do.	3				do.	do.	do.
Bucktail,	Drift,	Do.	2 8 to 3				do.	do.	Upper Kittanning.
St. Mary's,	Drift,	Do.	2 6 to 3				do.	do.	Dagus.
Tannerdale,	Drift,	Do.	2 6 to 3				do.	do.	do.
Cascade,	Drift,	Do.	2 6 to 3				do.	do.	do.
Eureka,	Slope,	Do.	3				do.	do.	do.
Walston, No. 1,	Drift,	Jefferson,	5 9				do.	do.	Lower Freeport.

Walston, No. 2,	Drift,	Do.	6	6′	do.	do.	do.	do.	do.	
Beechtree, No. 1,	Drift,	Do.	3 6		Sandrock,	do.	do.	do.	do.	
Beechtree, No. 2,	Drift,	Do.	3 6		Slate,	do.	do.	do.	do.	
Hamilton,	Drift,	Do.	5	4′	do.	do.	do.	do.	do.	
Pleasant Valley,	Drift,	Do.	5 2	2′ 1 to 2′	do.	do.	do.	do.	do.	
Soldier Run,	Drift,	Do.	5	2	do.	do.	do.	do.	do.	
Spragne,	Drift,	Do.	6 4	2 6′	do.	do.	do.	do.	do.	
Beaver,	Drift,	Lawrence,	3		do.	do.	do.	do.	Darlington.	
Clinton,	Drift,	Do.	3		do.	do.	do.	do.	do.	
Penn,	Slope,	Do.	4		do.	do.	do.	do.	Brookville.	
Pearson,	Shaft,	Do,	3 6		do.	do.	do.	do.	do.	
Clermont,	Drift,	McKean,	2 9		do.	do.	do.	do.	Clermont.	
Instanter, No. 1,	Drift,	Do.	3 4		Partly sandstone,	do.	do.	do.	Alton, Upper.	
Instanter,	Drift,	Do.	3 4 to 4		Slate,	do.	do.	do.	do.	
Bethel,	Shaft,	Mercer,	3		do.	do.	Sandstone,	Sharon Block.		
Lackawanna,	Shaft,	Do.	3 6		do.	do.	do.	do.		
Neshannock,	Shaft,	Do.	3		do,	de.	do.	do.		
New Virginia,	Shaft,	Do.	3 6		do,	do.	do.	do.		
Rankin,	Shaft,	Do.	3 2		Sandrock,	do.	do.	do.		
Atlantic,	Slope,	Do.	3		do,	do.	do.	do.		
Chestnut Ridge,	Shaft,	Do.	4 6	8	do.	do.	Slate,	Brookville.		
Black Diamond,	Shaft,	Do.	4 6	6 to 14	do.	do.	do.	do.		
Trout,	Shaft,	Do.	4 6	6 to 14	do,	do.	do.	do.		
Spears,	Shaft,	Do.	4 6	6 to 12	do.	do.	do.	do.		
Sharon,	Shaft,	Do.	3 4		do.	do.	Fire-clay,	do.		
Hall's Slope,	Slope,	Do.	4 6	8	do.	do.	Slate,	do.		
Hall's Shaft,	Shaft,	Do.	4 9		Slate,	do.	Fire-clay,	do.		
Enterprise,	Slope,	Do.	4 6	9	do.	do.	do.	do.		
Hickory,	Slope,	Do.	4 6	8	do.	do.	do.	do.		
Ormsby,	Slope,	Do.	3 to 4	3′ to 6	do.	do.	do.	do.		
Ormsby,	Shaft,	Do.	4 2	6	do.	do.	do.	do.		
Jackson,	Slope,	Do.	4 4	4	do.	do.	do.	do.		
Pardoe,	Drift,	Do.	4 6		do.	do.	do.	do.		
Stoneboro', No. 2,	Slope,	Do.	4 4	3	do.	do.	do.	do.		
Stoneboro', No. 3,	Slope,	Do.	4 4	3	do.	do.	do.	do.		
Maple Grove,	Drift,	Venango,	3 10		do.	do.	do.	Upper Mercer,		

TABLE VI.—*Giving a comparison for the four years of the number of fatal and non-fatal casualities, &c., in the Third Bituminous Coal District.*

YEARS.	Number of mines.	NUMBER OF EMPLOYEES.			ACCIDENTS BY FALLS.			ACCIDENTS BY MINE WAGONS.			ACCIDENTS BY SUNDRY CAUSES.			ACCIDENTS, TOTALS.		Tons of coal mined per fatal accident.	Tons of coal mined per non-fatal accident.	Number of employees per fatal accident.	Number of employees per non-fatal accident.	Number of widows.	Number of orphans.
		Inside.	Outside.	Total.	Fatal.	Non-fatal.	Total.	Fatal.	Non-fatal.	Total.	Fatal.	Non-fatal.	Total.	Fatal.	Non-fatal.						
1881, ...	96	6,407	833	7,240	5	19	24	1	12	13	2	7	9	8	38	500,000	105,263	905	191	4	18
1882, ...	117	7,388	923	8,311	13	29	42	4	7	11	. .	8	8	17	44	271,661	104,960	489	189	8	28
1883, (10 mos.) .	90	4,140	644	4 784	11	15	26	1	9	10	. .	2	2	12	26	129,114	59,591	399	184	7	14
1884, ...	90	4,219	742	4,961	6	8	14	1	8	9	1	4	5	8	20	269,375	107,750	620	248	4	10
Totals, . . .	*98	*5,538	*785	*6,324	35	71	106	7	36	43	3	21	24	45	128	*292,537	*94 391	*603	*203	23	70

*Average.

LIST OF ACCIDENTS *occurring in the mines of the Third Bituminous Coal District of Pennsylvania, for the year ended October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
Nov. 15	Hugh Jackson,	60	Married,				Nov. 15	Back broken by piece of falling rock from roof while working in Bethel shaft, Mercer county.
Dec. 25	Joseph Wolfe,	29	Married,					Four ribs broken by being run over by mine car in Maple Grove mine.
11	Henry Southworth,	14	Single,					Leg broken in State Line mine.
11	Harry Miller,							Back hurt by mine wagons in Walston mine, No. 2.
Jan. 15	Lars Anton Haglin,	21	Single,				Jan. 15	Killed instantly. Neck dislocated by fall of coal and rock while drawing heading of pillars in Dagus mine, No. 2.
28	George McDonald,	28	Married,					Face hurt by a premature blast in the Fairmount mine, No. 2.
22	Samuel Weakley,	53	Married,				Jan. 22	Knee hurt while putting a mine car on track in the Pardoe mine.
10	Frank Kahlard,	45	Married,				Jan. 10	Leg broken by fall of slate in his room in State Line mine.
Feb. 27	Bolvin Hughes,		Single,				Feb. 27	Fingers taken off by mine cars in Enterprise mine.
13	Jacob Stitsman,						Feb. 13	Hurt by fall of slate in room, Enterprise mine.
16	Henry Lewis,		Married,				Feb. 16	Slightly injured on left knee by piece of top coal in the Hamilton mine.
Mar. 17	Herbert Webb,	26	Single,					Arm injured by a drill in Bucktail mine.
3	Joseph Dinsley,	31	Married,					Leg Broken by mine cars in Eureka slope.
1	Joseph Watts,	45	Married,					Injured by fall of coal while mining in Stoneboro', No. 2.
20	William Carry,	35	Married,					Foot crushed by mine cars in Stoneboro' mine, No. 3.
17	August Nelson,	30	Single,					Killed instantly by a fall of rock from roof (weighing about two thousand pounds) while mining in his room in Trout mine.
April 11	John Hughes,	40	Married,					Injured by mine cars in Pardoe mine.
May 13	Richard Glover,	48	Married,					Leg broken by fall of roof rock in Clermont mine.
June 2	William Taylor,	12	Single,					Rib broken by mine wagon in Instanter mine.
9	George Hardchadock,	21	Single,				June 14	Killed instantly by fall of coal while mining in his room in Walston mine.
4	Harry Belton,	24	Single,					Leg broken while mining in room by fall of coal in Walston mine, No. 2.

LIST OF ACCIDENTS—*Continued.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
July 1	John Reed, ...	46	Married, . .	. .	. . . . .	. . . . .	July 8	Five ribs broken by fall of coal in Long Run mine.
31	Charley Letcher, ...	14	Single, . . .	. .	. . . . .	. . . . .	July 31	Killed by mine cars in Lackawannock shaft.
Sept. 15	Thomas Heaps, ...	38	Married, . .	3	. . . . .	. . . . .	Sep. 25	Killed instantly by fall of slate in Bethel mine.
29	John Mathison, ...	42	Married, . .	5	. . . . .	. . . . .	Oct. 3	Killed by fall of slate in Clermont mines.
2	Michael Sullivan, ...	35	Married, . .	. .	. . . . .	. . . . .	. . . . .	Arm broken in Sprague mine.
Oct. 10	William Wardrof, ...	. .	Married, . .	. .	. . . . .	. . . . .	. . . . .	Back hurt by fall of slate in Instanter mine.

FOURTH DISTRICT.

To the Honorable J. Simpson Africa, *Secretary of Internal Affairs of Pennsylvania:*

Sir: In compliance with the provisions of the mining law requiring the inspectors of the bituminous regions to complete their annual report on or before the first Monday in November in each year, I have the honor herewith to submit my report on the condition of the mines in the Fourth district, comprising the counties of Bradford, Blair, Centre, Clinton, Huntingdon, Lycoming, Potter, Tioga, and Sullivan, for the year ending October 31, 1884.

The state of the coal trade has been very much disturbed during the past year, strikes having taken place in Huntingdon, Centre, and Sullivan counties owing to reduction in the price of mining coal, and the unsettled state of trade is still agitating the minds of employés and employed. The Beech Creek, Clearfield, and South-western railroad commenced to ship coal over their road in July, and, at present, quite a large tonnage of coal is being produced at the mines on this road, and, in a few more months, this amount will be largely increased as their new mines are put in operation. The Lehigh Valley Coal Company, during the past year, have purchased the lands belonging to the Snow Shoe Land Association and intend to go into the business of making coke very extensively, and are building a large number of ovens so as to be ready for work in the spring. H. R. Powell's Sons & Co., of Minersville, Huntingdon county, during the past year, have changed a great many of the Belgian ovens into the old style of bee-hive ovens, and are now making a good quality of coke.

The Altoona Coal and Coke Company have their standard gauge railroad from Kittanning Point, Blair county, in running order to their new slope in Cambria county, and did quite a good business during the year.

The condition of the mines during the year has, on the whole, been fair, and there has not been much cause for complaint so far as regards the ventilation of the mines, and a great many of the operators are very desirous of seeing their mines kept in first class order and spare no expense to have them kept so.

The total number of accidents during the year was twenty-eight, ten of which resulted fatally, and are more fully described in another part of this report, and, as will be noticed, the majority of accidents are due to falls of roof and coal, and it is very much to be regretted that there should be so many accidents from this cause of falls.

I am very thankful indeed that, so far as I have noticed in the mines in this district, there is no fire-damp; but as shafts and slopes have to be sunk in some places to win the coal, we cannot keep too careful a watch against the appearance of fire-damp, and to act accordingly.

On November 1, 1884, I sent out circulars to the operators asking for returns for the year past, and a great many answered promptly, while the rest of the operators paid no attention to the matter whatever, and from the returns received I have made the following table, which I think is approximately correct:

Number of mines in the district,	70
Number of persons employed inside,	3,476
Number of persons employed outside,	642
Total number of persons employed,	4,118
Number of mules inside and outside,	485
Number of fatal accidents,	10
Number of non-fatal accidents,	18
Production in tons, (of 2,000 pounds each,)	2,390,335
Number of tons per fatal accident,	239,033
Number of tons per non-fatal accident,	132,796
Average number of days worked during the year,	225
Average price per ton for mining, cents,	49
Number of coke ovens in the district,	711

In addition to the tables accompanying this report, will be found a description of the mines visited during the year, and maps showing the workings of the Tunnel mines, Centre county, kindly contributed by G. H. Platt, general manager of the Clearfield Bituminous Coal Company; also, photographs of Long Valley mines, Bradford county, kindly furnished by Edward O. Macfarlane, general manager of the Long Valley Coal Company.

All of which is respectfully submitted.

Yours very respectfully,

ROGER HAMPSON.

TOWANDA, *December 18, 1884.*

Examination of Mines and Improvements.

Fall Brook mines, Nos. 1 and 2.

Mines owned and operated by the Fall Brook Coal Company. Anton Hardt, general manager; Frederick Wells, superintendent; Robert Russell, mining boss. Visited these mines January 16 and 17, and found No. 2 mine in good condition, most of the miners being at work on pillars near the outlet. Near the mouth of the drift, there were two headings being driven north.

No. 3 mine consists entirely of pillars, and is a very hard mine to ventilate properly, but those in charge have done all that is possible to carry air around the face of the workings, and in summer have two furnaces to ventilate the mine.

Owing to the gradual rise in the vein from the drift-mouth to the face of the workings in No. 3 mine, and also owing to the roof overlying the coal being shallow, the ventilation of the mine is all right in winter, as the measurements showed, on January 17, 20,000 cubic feet per minute going

in at the drift-mouth, while the amount passing over the furnace was only 7,000 cubic feet per minute, thus showing that the balance was going up through the falls to the surface.

Again visited these mines May 23, and found No. 2 mine in about the same condition as on my first visit, while in No. 3 mine the two furnaces were at work trying to ventilate the mine, and, in spite of everything, the black damp was coming from out the falls.

At furnace No. 1, 5,000 cubic feet of air per minute were passing, and at furnace No. 2, 7,500 cubic feet were passing, while the amount going in at the drift was only 3,600 cubic feet per minute, thus showing that the furnaces were drawing nearly 9,000 cubic feet per minute from the falls of roof.

I again visited these mines October 8 and 9, and found everything all right in No. 2 mine, there being nothing but pillar work at the back part of the mine, while a number of rooms were being worked in the headings near the drift-mouth. Ventilation in No. 3 mine was good, and should the mines work steadily during the winter, the great bulk of the pillars would be worked down to the main heading. Messrs. Wells and Russell are to be commended for the manner in which the work is carried on.

Morris Run.

These mines are operated by the Morris Run Coal Mining Company. W. S. Nearing, general manager; William Gilmour, superintendent of mines; Michael Driscoll and Campbell Adei, mining bosses. Three mines were worked during the year, namely: East mine, Slope mine, and Salt Lake mine.

East mine is confined to pillar work and employs about thirty miners; the ventilation is good in winter, while during the warm summer months they have to contend with the black damp. Visited these mines April 2 and 3, and in No. 2, or Slope, mine the ventilation was not good; the work is very extensive, and the furnace is located a long distance from the face of the present workings. Men are at work night and day driving the slope toward the old Blossburg workings, and in a short time the rope will be extended further down and another lift of the coal will be worked.

Salt Lake mine is in a long distance and the works very extensive; ventilation not very good; roads and drainage very good.

I again visited these mines September 10 and 11, and found the mines a little improved as to ventilation, and was assured that arrangements will soon be made to erect a fan near the mouth of the Slope mine. This is a step in the right direction and we may, I think, rest assured that by the time the slope is through into the old Blossburg workings, there will be a fan erected and in operation. These mines are capable of producing 1,500 tons of coal per day, and the coal is of first-class quality for steam purposes. The mines give employment to nearly 600 men and boys, and during the year work has been fair.

Antrim mines.

These mines, three in number, are owned and operated by the Fall Brook Coal Company. James Pollock, assistant manager; Thomas Gaffney, superintendent of mines; and Henry Grinnell and James Gaffney, mining bosses.

Visited these mines November 27 and 28, 1883, and in No. 1 drift the ventilation was not at all good, and in the slope on No. 2 mine the ventilation was not at all good. Preparations were being made to put up a Murphy fan near the mouth of No. 1 drift, so as to ventilate both No. 1 and No. 2 mines, and at the time of my secoed visit, February 12 and 13, 1884, the fan was working, and the ventilation in No. 1 mine was very good, while in No. 2 mine the ventilation was not much improved.

Again visited these mines September 4, and found the Slope mine idle, and all the men at work in No. 1. The fan was running good, and the ventilation of the mine was first-class, there being a good current passing through the cross-cuts, and across the face of the ranges of rooms.

During the year, a new air-compressor, built by the Norwalk Compressor Company, has been erected at the mouth of No. 1 mine, and furnishes the air required to run eight Harrison coal-cutting machines, which are run night and day, and also supplies power to run three pumps that are used to pump water from three dips in the mine.

A new drift was put in during the year on the Cushing vein, and shows about three feet of clean, bright coal. A new engine was put up at the top of the slope, and the coal hauled out by an endless rope, and everything works well. The coal is then hauled by locomotive to the chutes. The mines are capable of producing 1,000 tons of coal per day, and employ over 500 men and boys.

Arnot mines.

These mines, three in number, are owned and operated by the Blossburg Coal Company. Henry J. Landrus, general manager; John Dunmore, superintendent of mines; John McKay and John Hill, mining bosses. The mines are named No. 1, or Plane drift; No. 2, or North drift; and No. 3, or Lower drift. The plane leading to No. 1 drift was destroyed by fire last May, and has not been worked since. The work was all pillar work. No. 2 mine is in for a distance of nearly three miles, and the headings, being driven north, are in good coal, averaging five feet in thickness. No. 3 mine is in for a distance of nearly three miles, and the main portion of the men are employed in this mine. The ventilation of these mines is very good. During my first visit, March 20 and 21, I measured the air current passing through the last cross-cut, and distance from the fan being over two and a half miles, and the amount was 35,000 cubic feet of air per minute, and in one of the three splits of air in No. 2, or North drift, distance from the fan being two and a half miles, the amount passing was 20,000 cubic feet per minute, and the amount measured near the fan being 100,000 cubic feet per minute.

Again visited these mines July 23, 24, and 25, and found things in first-

rate condition, everything being well looked after, and no expense being spared to keep the mines in good condition.

These mines have not worked very steadily during the year, owing to the depressed condition of the coal trade. About 750 men and boys are employed in these mines, and the mines, if run to their full capacity, are capable of producing 2,000 tons of coal per day.

Gaines mines

Are owned and operated by the Gaines Coal and Coke Company. P. A. Jordan, superintendent of mines; Patrick Smith, mining boss.

There are three drifts put in on the vein, but only two have been worked during the year. Ventilation is by furnace, and is amply sufficient for the needs of the men employed. The vein is about 3 feet in thickness, and headings are driven single, with airway following. Rooms are turned off single, and if the roof will warrant it, double.

The condition of the mines is good, and everything being well looked after by Mr. Jordan, who is a thoroughly competent man and understands his business. 55 men and boys are employed, and the work has been very good during the year. Visited these mines March 12, and again visited them August 14. No. 3 drift was put in during the year.

McIntyre.

Visited these mines three times during the year, the first visit being December 26 and 27, and found things in fair condition. Again visited them May 21 and 22, and found the ventilation in No. 4 mine improved, as a shaft had been put down near the face of the workings. Mines Nos. 2, 3, and 8 were all confined to pillar workings, and ventilation was good under the circumstances. I paid them another visit August 7 and 8, and found drifts Nos. 2, 3, and 8 worked out, and the men employed in No. 4 drift pulling back the gangway pillars. Everything was in good shape at that time, and the mines were abandoned at the beginning of October, and the men drafted to the new mines opened at Peale, Centre county. G. H. Platt, general manager; Thomas Blyth, superintendent of mines.

Barclay mines.

Mines owned and operated by the Towanda Coal Company. F. F. Lyon, general manager; Thomas Ditchburn, superintendent of mines; Fred. Lyon, Henry Dickinson, Michael Mannix, mining bosses. Four mines working at the present time.

Mines 1 and 2 are all confined to pillars and will last for quite awhile yet. Ventilation is very good in these two drifts. Mines 3 and 4 are the principal mines here, and there are a few headings being driven. Ventilation of mines by furnace, and is very good. About 240 men and boys are employed in these mines, and work has been fairly good during the year. A locomotive is used to haul the coal from drifts 1, 3, and 4. Visited these mines May 1 and again October 3 and 4.

Schraeder mines.

Mines operated by the Schraeder Coal Company. R. A. Abbott, general manager; D. R. Jones, superintendent of mines.

These three mines have been confined to pillars, and work, during the last year, has been very good and the pillars were removed very quickly, and now there are not many men at work and the mines will be abandoned before the end of the year. Visited these mines January 19, June 25, and October 2; always found them in good shape as to ventilation and drainage.

Long Valley.

These mines are operated by the Long Valley Coal Company. Edward MacFarlane, general manager; John Carroll, superintendent of mines.

Visited this place February 8 and found the ventilation fair. Again visited this place August 1, and ventilation about the same as at my former visit. A heading was being driven at the back of the fault and going eastward, and one was started from near the drift-mouth and driven north, and, since my last visit, the two headings have met, and it has improved the ventilation of the mine.

A syphon has been put in place of the mule pumps, and the mine is kept free from water. A new drift has been started at the lower end of the field, and, when a connection is once made with the present south-side workings, the mine will drain itself.

Fall Creek.

This mine has done very little business during the past year.

Bernice mines.

These mines are owned and operated by the State Line and Sullivan Railroad Company. I. C. Blight, general manager; James Ross, mine superintendent.

Visited these mines February 27 and 28, and found both No. 1 mine and the Jackson in good condition.

A strike took place from July 1 to September 1. I again visited these mines September 17 and 18 and found them in fairly good condition.

In the Jackson drift, the headings had been pushed west and north, and the mine was well looked after. In No. 1 mine the main heading was being pushed eastward, and a good body of coal was being opened. About 150 men and boys are employed.

Renovo mines.

These mines have not worked during the past year.

Snow Shoe.

These mines are operated by Berwind, White & Company. Peter Cameron, general manager; Robert Cooper and John Batterby, mining bosses.

VIEW No. 1.

No. 8 mine and Sugar Camp mine are the only ones that have been worked during the year.

Visited these mines June 11 and 12, and found No. 8 mine in fair condition, and Sugar Camp mine was also in fair condition. Again visited these mines October 30 and 31, and in No. 8 mine a body of coal sufficient to turn off two headings had been struck. The ventilation was poor, so I requested Mr. Batterby to cut through an airway to another part of the old workings so as to make a return for the air. In Sugar Camp mine the ventilation was good, and here the main body of men are at work.

During the past summer, the Lehigh Valley Coal Company have purchased the Snow Shoe property of nearly 50,000 acres of coal and timber land, and will take possession May 1, 1885, and, in the meantime, they are putting in a drift on the "D seam," and are going to enlarge the drift on the "B seam," and are building 100 coke ovens. A new tramroad is being graded from the new mine on "D" seam, and shafts are being sunk to both "D" and "B seams" for ventilation, and, as the coal is an excellent coking coal, the business of making coke will be largely entered into.

Somerville mine.

Mine operated by Harned, Jacob & Co. James L. Somerville, superintendent of mine; Alexander Huston, mining boss.

This mine has not worked very steadily during the past year, the headings have all been driven into the old Gunsauls workings, and the ventilation of the mine was good. A new drift was put in on the same vein during the past year, and as soon as trade revives it will be started. The mine is well looked after and employs about 80 men and boys.

Moshannon Summit.

This mine was opened last year by James Pope, and is now owned and operated by Boak, Orvis & Co. Theodore Boak, general manager; George Wilson, superintendent of mines.

Mine is worked on the double-heading system, and rooms turned off single. A good ventilating furnace has been erected during the fall and is amply sufficient to ventilate the mine. The coal is low, but of good quality, and the coal can be shipped either by way of the Bellefonte and Snow Shoe railroad or the new Beech Creek, Clearfield, and South-Western railroad.

Visited this mine June 11, and again October 31, 1884.

Tunnel mines.

These mines, four in number, are owned and operated by the Clearfield Bituminous Coal Company. G. H. Platt, general manager; Thomas Blythe, superintendent of mines; John Charlton and George Bateman, mining bosses.

Drifts are 26 feet wide and 7 feet in height. Headings are driven double and laid with steel rails. The rooms are turned off single and pillars with-

drawn, when the room is worked up to the required distance. The coal will average three feet in thickness.

There is a furnace, 8 feet by 10 feet, in each drift; the average amount of air passing over each furnace was 35,000 cubic feet per minute. No expense whatever has been spared in opening these mines and providing ventilation, and those in charge are to be commended for the pains they have taken to make their mines models worthy of imitation.

Over 400 men and boys are employed here, and the mines are producing from 800 to 1,000 tons of coal per day.

This coal is shipped over the Beech Creek, Clearfield, and South-Western railroad and goes east from Newberry Junction, *via* the Reading system, and north from Jersey Shore, *via* the Pine Creek railroad and Corning, Cowanesque and Antrim railroad. The B. C. C. & S. W. R. R. is being rapidly pushed forward to the valuable coal fields in Clearfield county, and will open up an immense body of coal lands in that county.

Phœnix mine.

Owned and operated by Orvis & Co.; John Burns, superintendent of mine. The coal is used mainly in supplying the engines on the branches of the Tyrone and Clearfield railroad. Visited this mine April 19, and found the mine in fair condition. Again visited the mine October 27, and found the ventilation fair. A small furnace is used, and by attending carefully to it, it is sufficient for the needs of the mine. Work has been very good at this place during the year. About 40 miners are employed.

Boynton mines.

These mines have not been worked during the year.

Wallace mine.

This mine has also been idle during the year.

Sterling No. 3.

This mine has been shut down for over a year.

Rush mine.

Operated by Mears Bros.; Daniel Campbell, superintendent of mines. At my first visit, April 19, the ventilation of the mine was very poor; but a small furnace was built, and that helped the ventilation a little. Soon afterward a large dip was encountered in the main heading, and at the time of my second visit, October 28, they had just got through it, and had started headings right and left off the main heading, and were driving air-course back to connect with workings outside the dip, and when that is finished there will be a better chance to ventilate the mine thoroughly. The Mears Bros. have worked under great difficulties during the past few months.

VIEW No. 2.

LOCOMOTIVE AND BLACKSMITH SHOP, LONG VALLEY MINE.

About 30 miners are employed, and the work has not been very good during the past year. The seam of coal is about six feet in thickness.

Black Diamond.

Mine operated by W. J. Jackson. Robert A. Jackson, superintendent of mines; John O'Neil, mining boss. Mine located at Powelton, on the Tyrone and Clearfield railroad, and the work has been very steady during the past year. At the time of my first visit, the ventilation was not good, but a large fire-basket was hung in the shaft, and improved it very much. At the time of my second visit, the men were all at work in a lot of pillars that were left years ago, and the removing of these pillars will last a long time. The ventilation was fair.

During the year, the trestle leading from the new drift to the chutes has been built, and the engines placed in position to haul the coal by the tail-rope system; but owing to the condition of the coal trade, the new mine has not been worked.

Horseshoe mines.

Mines owned and operated by the Altoona Coal and Coke Company. Andrew Patrick, superintendent; Charles Kelly, mining boss. Work has been very poor at this mine during the year, and at my first visit, April 17, the ventilation of the mine was fair. They had shortened the hauling road very much by cutting across some of the old works, and were cleaning up an old drift to put it in order so as to build a furnace; and when I visited them again, October 25, the furnace was built and the ventilation of the mine was good. The vein worked is the Miller vein and the coal is very low, not being much over two feet in thickness, but very pure, and it makes a first-class quality of coke. The headings are driven single, with air-course following.

No. 2 mine has not been worked for over a year, the cars and rails having been taken up to the New Slope mine of the company's in Cambria county.

Glen White.

This mine is owned and operated by the Glen White Coal and Lumber Company. David McCoy, superintendent; Valentine Eichenlaub, mining boss. The Miller vein is worked and the coal is made into coke. Visited this mine April 17, and at that time the bulk of the men were at work in the old drift taking out the pillars, while a party of men were engaged in putting in a new drift.

At my last visit, October 24, all the men were at work in the new drift, and the ventilation was poor, as the headings had been pushed night and day, and doors had been neglected, and also the bratticing. The superintendent promised that the matter of hanging doors and putting up brattice should be immediately attended to. A furnace has been built, and is amply sufficient for the number of men employed.

A new slope is to be sunk about three hundred feet from the drift mouth, and as the main body of coal belonging to this company lies to the dip, the improvements will be permanent.

Juniata.

This mine is operated by the Juniata Valley Coal Company. William Bathurst, superintendent; Robert Dickson, mining boss. About 30 miners are employed, and the work was moderately good during the year. Visited the mine April 16, and found the ventilation fair. A furnace was built during the summer, and helped the ventilation quite a little.

Again visited this mine October 23, and found the ventilation not very good, as the main heading was too far in advance of the return airway. I requested Mr. Dickson to put up a couple of doors, so as to carry the air-current near to the face of the heading, and he promised to do so immediately.

Bennington Slope.

Mine owned and operated by the Blair Iron and Coal Company. Martin Meagher, superintendent; Charles Bradley, mining boss.

Visited this place April 16, and the ventilation at that time was poor, as the airways were too far behind the headings.

Again visited the mine October 24, and the ventilation was again poor, as the airways were not kept to the face of the works.

Porter Shaft.

This mine is on the same vein as the Bennington Slope, and is ventilated by the same fan. Mine owned and operated by Denniston, Porter & Co. C. H. Porter, superintendent; John Leonard, mining boss.

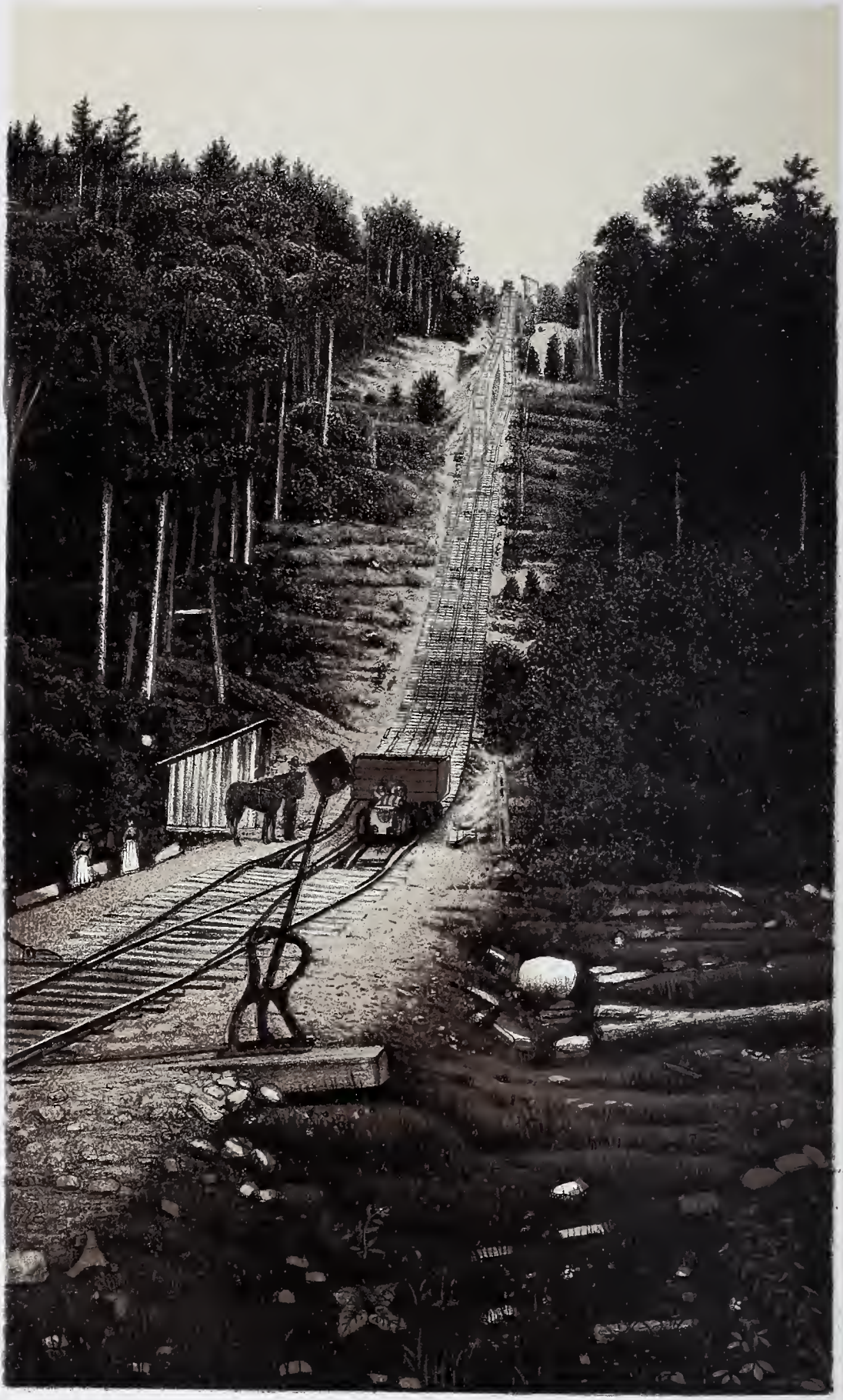
At my first visit, April 16, the ventilation of the mine was very good, Mr. Leonard having kept the air courses near to the face of the headings; but on my second visit, October 24, the mine was in poor shape, as the airways had not been carried up to the face of the headings, and the ventilation was poor. I requested Mr. Leonard to cut the air course as soon as possible and he promised to do so, and letters since received from the superintendent say the airways are now up to the face of the headings, and the ventilation is good. This mine has not run very steadily during the year; about 65 miners are employed.

Renovo mines.

These mines have been idle during the past year.

Robertsdale.

These mines, five in number, are owned and operated by the Rockhill Iron Company, and are located at the terminus of the East Broad Top railroad. A. W. Sims, superintendent; David B. Patrick, mining boss. The work at this place was not very good during the past year, and at the



LONG VALLEY PLANE.

time of my first visit, June 7, the shaft was working, and a few men were driving headings in No. 1 mine. The ventilation at that time was good.

Again visited this place October 23 and 24, and found the shaft and No. 3 mine at work, while No. 1 mine had been abandoned. The ventilation in the shaft and No. 3 mine was fair, and the mining boss was going to abandon the present plan of driving the air-courses on the top seam of coal, and to drive double-headings instead, and if this plan is carried out, I don't see why the condition of the mines will not be very much improved, and at no greater cost than at present. There is a very large body of coal here, but it is very much disturbed, the deep troughs running through it, and, in consequence of these troughs, the mine cannot be kept in as good shape as those more favorably situated.

Carbon mines.

These mines are located at Broad Top City, Huntingdon county. No. 1 mine was abandoned during the early part of the year by the lessees, the Mears Bros., and now they are only operating the No. 2 mine. At my first visit, June 6, only the main heading was being pushed forward, and the ventilation was fair. Again visited this mine October 22, and the main heading was almost driven to the hill. The ventilation of the mine was good, a small furnace being in operation. About 40 miners are employed at this place.

Fisher mine.

This mine was idle during the past year.

Moredale.

Mine owned and operated by Reakert Bros. & Co. David Conrad, superintendent; William Meagher, mining boss. Work has been very poor at this place during the past year. Visited this place June 6, and found the mine in good condition, with the exception of the main heading, and this was owing to the air-course being so far behind the face of the heading.

At my second visit, October 22, a new opening had been made into the old Moredale workings, and the ventilation was good, and the airway close to the face of the main heading.

Ocean mine.

Operated by W. H. Sweet, and Mr. Sweet also manages his mine himself. Very few men were at work here at my first visit, June 6, and the ventilation was very poor. Mr. Sweet had started to drive a heading toward the old Howe mine, and at my second visit, October 22, it was cut through, and the ventilation was much improved. A good body of coal had also been struck, and things are looking a little brighter for this mine.

Cliff mine.

This mine has been idle during the past year.

Benedict mine.

Operated by the Reed Bros. William Reed, manager; Scott Reed, mine boss. At the time of my first visit, June 5, the ventilation was not good; but those in charge were trying to drive an airway through into the Mitchell mine, and when I again visited them, October 21, the airway was cut through, and the ventilation at that time was very good; in fact, it was the best ventilated mine in the county, and those in charge had worked hard to bring it up to its present condition. About 60 miners are employed, and they are now shipping about 200 tons of coal per day.

Minersville.

Owned and operated by R. H. Powell's Sons Co. Edward McHugh, superintendent; John Palmer, mining boss. At the time I first visited this mine, June 4, it was in fair condition, and a furnace was being built at that time. I again visited the mine, October 21, and the mine was in poor condition, as the air-ways had not been kept up to the face of the work. I wrote Mr. McHugh in regard to the matter, and he promised to remedy the matter at once.

Mitchell mine.

Owned and operated by R. H. Powell's Sons Co., and at my first visit, June 5, there was quite a number of men at work taking out the pillars; but on my second visit, October 21, the mine was idle, the men having been drafted into the Minersville mine. Condition of mine at my first visit was good.

Description of Fatal Accidents.

ACCIDENT No. 1.—August Fuernberg, a Swede, employed in the North Drift, Arnot, Tioga county, was killed by a fall of coal, January 19, 1884.

Deceased, in company with another, was working in a loose end room, and had a deep fall of coal mined, and being in a hurry to get some coal loose so as to load a car, he lay down in front of the coal to take out the coal pillar at the corner, or loose end, and, while doing so, the coal came away, and falling on him, killed him instantly.

This accident seems to have been due to negligence, or to the ignorance, of the deceased, for there was a clay parting above the coal, and was of such a nature that it would fall almost of itself at all times; but in this case, the mining was very deep, and almost mined across the room, and must have, more or less, settled so that the thing necessary to bring it down was the removal of the stump of coal, and no miner who understood his business thoroughly would have lain down in front, but have stood on one side while taking out the stump.

ACCIDENT No. 2.—John Hay, a boy employed at Arnot Mine No. 3, was killed by a fall of coal, January 30, 1884.

The boy, in company with his father, was at work on a skip, and the night previous to the accident a shot had been fired on the fast side of the

place, and it had failed to bring down the coal, and next morning, on going to work, the father drilled the hole deeper and again fired a shot, and this failed to bring the coal down, and being in a hurry to load his car, he went to the loose end of the fall and commenced to brush down the coal, and the boy stood in front of the fall of coal, shoveling the loose coal towards the car, and while so doing, the coal fell, completely burying him. Help was immediately summoned and the boy got from under the coal and removed home. He continued to breathe for forty minutes, but never spoke.

Accident No. 3.—Gus. Anderson, a Swede, employed in East mine, Antrim, Tioga county, was injured by a fall of coal and bone January 22, and was supposed not to be seriously injured, but inflammation of the bowels set in and he died February 7, 1884.

Accident No. 4.—Lars Toline, aged sixty, a Swede, employed at Antrim mines, Tioga county, was badly crushed by a fall of slate, February 7, and died next day, February 8, 1884.

Deceased, in company with three other miners, was engaged in pulling back gangway pillars, and there was quite a crush on the place, and while deceased was loading a car, a piece of slate weighing nearly a ton fell upon him, with the above result. On an examination of the place, it was found to be well propped, but the roof was of a loose, shaly nature, and this, combined with the squeeze on the place, made it all the more dangerous.

Accident No. 5.—Michael Cooney, aged fifty years, and employed at Bennington slope, in company with another miner, was engaged in retimbering the waterway, and while throwing the clay from over the old timbers to those newly put up, was injured by a fall of the clay, and, in falling, he struck his arm on a pick.

This was April 10, 1884, and Mr. Cooney died from the effects of the injury and blood-poisoning. Mr. Cooney had formerly been mine foreman at this mine, and was always considered a careful miner. He leaves a wife and three children to mourn his loss.

Accident No. 6.—Joseph Wheeling, a boy employed in Mitchell mine, Huntingdon county, was instantly killed by a fall of slate, May 1, 1884.

Deceased was working in company with another miner, and after having had a lunch, was sitting close to the rib of coal, when, without any warning, an overhanging piece of slate fell upon him with the above result.

Accident No. 7.—Michael Welsh, aged thirty-five years, and employed in the Jackson mine, Bernice, Sullivan county, was severely injured in the leg by a fall of slate and coal, June 17, 1884, and after lingering for ten days, the doctors decided to amputate the limb, and did so, but Mr. Welsh, owing to loss of blood and the shock to his nervous system, only survived the loss of his limb for thirty minutes. Mr. Welsh was a hard-working and careful miner, and leaves a wife and two children to mourn his loss.

Accident No. 8.—David McDonald, aged fourteen, was killed by a fall of blacksmith coal in East mine, Carbon Run, Bradford county, June 14.

Deceased, in company with his father and another miner and his boy,

was engaged in pulling back gangway pillars, and two falls of coal had been taken off, and the blacksmith coal, being so hard and tough, had been left up, and no props put under it, as it was not considered dangerous, and while the men and boy were at work, the alarm was given that the blacksmith coal was falling, and each one endeavored to save himself, but young David was struck and instantly killed by the coal, while his father's ankle was broken by the same fall of coal. Clearly this was a case of negligence on the part of the men, as they trusted entirely too much to the blacksmith coal staying up.

ACCIDENT No. 9.—A. G. Sandine, a Swede, aged twenty-two years, was instantly killed by a fall of coal at Antrim mines, Tioga county, July 22, 1884.

Deceased, in company with five other men, was engaged in blasting and loading the coal after it had been undermined by the Harrison coal-cutting machine, and had blasted the two lower benches of coal and slate, and before bringing down the upper bench, he commenced to lay a piece of track so as to bring his car nearer to the face of the coal, and while engaged in driving the last spike, the coal fell upon him, killing him instantly.

ACCIDENT No. 10.—Benjamin Black, aged fifty years, employed in No. 3 mine, Robertsdale, Huntingdon county, was instantly killed by a fall of coal, August 25, 1884.

It appears that on the Saturday previous the deceased had fired a shot in the coal, and had thereby loosened it, and on coming to work late on Monday, he commenced to work at undermining the coal, and had not worked many minutes when the coal fell from the slip, striking him on the right side of the head and fractured his skull, producing hemorrhage, and causing his death in about twenty minutes after the accident.

RESIDENCES OF MINERS, LONG VALLEY MINE

TABLE I.--SHOWING LOCATION OF COLLIERIES IN THE FOURTH BITUMINOUS MINE DISTRICT.

Name of Colliery.	Name of Company.	Location—County.	Name of Superintendent.	Post-Office Address.
Barclay, Nos. 1, 2, 3. and 4,	Towanda Coal Company,	Bradford,	F. F. Lyon,	Barclay, Bradford county.
Carbon Run, Nos. 1, 2, and 3,	Schraeder Coal Company,	do.	R. A. Abbott.	Carbon Run, Bradford county.
Long Valley,	Long Valley Coal Company,	do.	Edward Macfarlane,	Towanda, Bradford county.
Fall Creek,	Fall Creek Coal Company,	do.	W. M. Malloy,	do. do.
Bennington Slope,	Blair Iron and Coal Company,	Blair,	John Fulton,	Johnstown, Cambria county.
Porter Shaft,	Dennlston, Porter & Co.,	do.	C. H. Porter,	Hollidaysburg, Blair county.
Juniata,	Juniata Valley Coal Company,	do.	William Bathurst,	Gallitzin, Cambria county.
Glen White,	Glen White Coal Company,	do.	David McCoy,	Glen White, Blair county.
Horse Shoe,	Altoona Coal and Coke Company,	do.	Andrew Patrick,	Altoona, Blair county.
Black Diamond, Nos. 1 and 2,	W. J. Jackson,	Centre,	W. J. Jackson,	Osceola, Clearfield county.
Enterprise,	J. H. Orvis & Co.,	do.	John Burns,	do. do.
Boynton, Nos. 1 and 2,	Boynton Coal Company,	do.		
Sterling, No. 3,	R. H. Powell & Co.,	do.		
Rush Mine,	Mears Bros.,	do.	Daniel Campbell,	Osceola, Clearfield county.
Snow Shoe, Nos. 1, 2, and 3,	Berwind. White & Co.,	do.	Peter Cameron,	Houtzdale, Clearfield county.
Somerville.	Harned, Jacob & Co.,	do.	James Somerville,	Bellefonte, Centre county.
Moshannon Summit,	Boak, Orvis & Co ,	do.	George Wilson,	Snow Shoe, Centre county.
Wallace Mine.				
Renovo Mines, Nos. 1 and 2,		Clinton.		
Robertsdale, Nos. 1, 2, and 3,	Rockhill Iron Company,	Huntingdon,	A. W. Sims,	Orbisonia, Huntingdon county.
Carbon Mine, No. 1,	Mears Bros.,	do.	Harvey Mears,	Broad Top City, Huntingdon county.
Ocean Mine,	W. H. Sweet,	do.	W. H. Sweet,	Dudley, Huntingdon county.
Fisher mine,	Reakert Bros. & Co.,	do.	David Conrad,	do. do.
Moredale,	do. do.	do.	do.	do. do.
Benedict.	Reed Bros.,	do.	Scott Reed,	do. do.
Milnersville,	R. H. Powells' Sons Co.,	do.	Edward McHugh,	Saxton, Bedford county.
Mitchell Mine,	do. do.	do.	do.	do. do.
McIntyre,	McIntyre Coal Company,	Lycoming,	G. H. Platt,	Peale, Clearfield county.
Morris Run, Nos. 1, 2, and 3,	Morris Run Coal Company,	Tioga,	W. S. Mearing,	Morris Run, Tioga county.
Fall Brook, Nos. 1, and 2,	Fall Brook Coal Company,	do.	Frederick Wells,	Fall Brook, Tioga county.
Antrim, Nos. 1, 2, and 3,	do. do.	do.	James Pollock,	Antrim. Tioga county.
Arnot, Nos. 1 and 2.	Blossburg Coal Company,	do.	H. J. Landrus,	Arnot, Tioga county.
Gaines, Nos. 1 and 2,	Gaines Coal and Coal Company,	do.	P. A. Jordan,	Gurnee, Tioga county.
Bernice, Nos. 1 and 2,	State Line and Sullivan Railroad Company,	Sullivan,	J. O. Blight,	Towanda, Bradford county.

TABLE II.—*A statement showing Characteristics, Number of Employés, Production, &c., of the respective Collieries, in the Fourth Bituminous Mine District, for the year 1884.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Antrim, Nos. 1, 2, and 3,	Semi-bituminous,	Drift,	4	1	60	4	342	29	42	414	30	3	..	223,150
Arnot, Nos. 1, 2 and 3,	do.	Drift,	..	..	..	..	475	119	196	780	70	6		
Barclay, Nos. 1, 2, 3, and 4,	do.	Drift,	2	3	.	3	239	25	142	406	60	6		
Benedict,	do.	Drift,	..		.		55	14	9	70	3	5	..	8,660
Bennington,	do.	Slope,	..	2		5	82	12	31	126	17	1	..	62 445
Bernice, Nos. 1 and 2,	Semi-anthracite,	Drift,	2	3	60	2	127	33	44	204	28	4	.	70,000
Carbon Run, Nos. 1, 2. and 3,	Semi-bituminous,	Drift,	...				45	5	5	55	9	1	..	9 000
Fall Brook, Nos. 1 and 2,	do.	Drift,	..	..	..	.	131	27	10	119				
Gaines, Nos. 1 and 2,	do.	Drift,	.	..	..	.	41	4	12	56	2	1	.	19.035
Glen White,	do.	Drift,	...	...	..	..	48	3	10	63	4	3	...	40.291
Horseshoe, Nos. 1 and 2,	do.	Drift,	...	...	..	...	35	9	9	53	7	4		11,700
Long Valley,	do.	Drift,	.	.	...	..	99	5	28	132	12	1	1	
McIntyre, Nos. 1, 2, 3, and 4,	do.	Drift,	...	...	...	.	147	31	42	220	26		1	105. 690
Minersville,	do.	Drift,				..	32	4	8	44	5	2		5. 900
Mitchell Mine,	do.	Drift,					21	1	7	28	3	1		2.729
Morris Run, Nos. 1, 2, and 3,	do.	Drift,	2	4	120	4	351	144	83	578	49	...	1	345, 495
Ocean Mine,	do.	Drift,					25	4	4	33	3		..	4, 844
Porter Shaft,	do.	Shaft,		1	20	2	29	18	16	63	12	2		24,962
Robertsdale, Nos. 1, 2, and 3,	do.	Shaft and drift,	2	1	90	3	94	15	28	137	13	5	..	73,528
Snow-Shoe, Nos. 1, 2, and 3,	Bituminous,	Drift,	..		.		152	19	20	191	9	2		
Somerville,	do.	Drift,	...	...	..	..	82	6	15	103	8		..	7.500
Sterling, No. 3.	do.	Drift,	...	..	..	..	60	5	7	72	3	1	..	4 650
Tunnel Mines, Nos. 1, 2, 3, and 4,	do.	Drift,	.	..	..	..	255	11	25	291	11	..	...	72,798

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Fourth Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Antrim, No. 1,	Fan,	8		45,000	2	8	42	48
Antrim, No. 2,								
Antrim, No. 3,	Furnace,		6 x 9	10,500	2	4	40	37
Arnot, No. 1,	Furnace,		5 x 6	24,000	2	5	42	27
Arnot, No. 2,	Fan,	20		95,000	2	6	50	42
Arnot, No. 3,						18	100	100
Barclay, No. 1,	Furnace,		6 x 8	25,000	2		72	100
Barclay, No. 2,	Furnace,		5 x 7	22,000	2	3	92	92
Barclay, No. 3,	Furnace,		5 x 7	18,000	2	5	40	60
Barclay, No. 4,			5 x 7	16,000	2	6	36	40
Bennington,	Fan,	6		27 000	2	4	140	352
Bernice, No. 1,	Furnace,		5 x 8	14.000	3	5	30	30
Bernice, No. 2,	Natural,			10 000	2	5	40	60
Benedict,	Natural,			5,000	2	4	40	30
Black Diamond, No. 1,	Fire basket,			6,000	2	4	30	30
Black Diamond, No. 2,					2	2	40	36
Carbon Run, No. 1,	Natural,				2	2	100	50
Carbon Run, No. 2,	Natural,				2	2	64	90
Carbon Run, No. 3,	Natural,				2	3	50	60
Carbon Mine, No. 1,	Natural.							
Carbon Mine, No. 2,	Furnace,		4 x 6	3,000	2	3	40	20
Cliff Mine,	Natural.							
Fall Brook, No. 1,	Furnace,		5 x 9	9,000	2	9	30	30
Fall Brook, No. 2,	Furnace,		6 x 9	10,000	2	5	35	60
Fall Creek,	Natural,				2		36	36
Fisher,	Natural,				2	3	36	22
Glen White,	Furnace,		5 x 7	6 000	2	5	40	30
Gaines, No. 1,	Furnace,		4 x 6	10,000	2	2	40	30
Gaines, No. 2,					2	3	40	30
Horse Shoe,	Furnace,		5 x 6	7,000	2	4	30	38
Long Valley,	Furnace,		6 x 9	16,000	2	6	100	40
McIntyre, No. 1.								
McIntyre, No. 2.								
McIntyre, No. 3								
Morris Run, No. 1,	Furnace,		5 x 7	30,000	2	3	90	70
Morris Run, No. 2,	Furnace,		6 x 8	32,000	2	10	130	66
Morris Run, No. 3,	Furnace,		8 x 12	34 000	2	8	95	52
Minersville,	Furnace,		6 x 8	8,000	3	6	40	36
Mitchell Mine,	Natural,				2		40	36
Moredale,	Natural,			7,000	2	3	40	30
Ocean,	Natural,			6,000	2	2	42	30
Porter Shaft,	Fan,			15.000	2	3	40	24
Phœnix,	Furnace,		4 x 6	7,000	2	3	40	25
Robertsdale, No. 1.								
Robertsdale, No. 2,	Furnace,		6 x 8	17,000	2	3	36	40
Robertsdale, No. 3,	Furnace,		5 x 7		2	2	40	36
Renovo,	Furnace,		4 x 6		2	3	36	40
Rush Mine,	Furnace,		4 x 6	5 000	2	3	40	36
Snow Shoe, No. 1,	Furnace,		6 x 8	17,000	2	2	48	34
Snow Shoe, No. 2,	Furnace,		5 x 6		2	4	43	30
Snow Shoe, No. 3,	Furnace,		7 x 10	35,000	2	3	36	40
Somerville Mine,	Natural.			9,000	3	3	36	42
Sterling, No. 3,	Natural,			7,000	2	3	36	42
Wallace Mine,	Natural.							

TABLE IV. *Showing an average monthly statement of the ventilation of the respective collieries in the Fourth Edmundston Mine District, for the year commencing November 1, 1886, and ending October 31, 1887.*

NAME OF COLLIERY.	NOVEMBER.				DECEMBER.				JANUARY.			
	Velocity of air current per minute at inlet.	Number of cubic feet passing per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at inlet.	Number of cubic feet passing per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at inlet.	Number of cubic feet passing per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.
Aulcbin, No. 1,	600	25,000	90	3,600	475	20,000	120	4,800	475	19,950	120	4,800
Aulcbin, No. 2,	460	30,000	180	7,200	360	30,000	240	9,600	360	30,000	240	9,600
Aulcbin, No. 3,	300	10,500	260	7,200	300	11,500	260	7,200	300	11,500	260	7,200
Arnott, No. 1,	240	24,000	400	16,000	240	24,000	400	16,000	240	24,000	400	16,000
Arnott, No. 2,	1,000	50,000	150	6,000	1,000	50,000	150	6,000	1,000	50,000	150	6,000
Arnott, No. 3,	460	40,000	170	6,800	460	40,000	170	6,800	460	40,000	170	6,800
Barclay, No. 1,	600	17,000	250	7,000	600	17,000	250	7,000	600	17,000	250	7,000
Barclay, No. 2,	1,000	50,000	360	18,000	1,000	50,000	360	18,000	1,000	50,000	360	18,000
Barclay, No. 3,	800	32,000	320	12,800	800	32,000	320	12,800	800	32,000	320	12,800
Barclay, No. 4,	800	32,000	320	12,800	800	32,000	320	12,800	800	32,000	320	12,800
Barclay, No. 5,	600	24,000	240	9,600	600	24,000	240	9,600	600	24,000	240	9,600
Bernier, No. 1,	140	8,400	60	3,600	140	8,400	60	3,600	140	8,400	60	3,600
Bernier, No. 2,	300	15,000	120	6,000	300	15,000	120	6,000	300	15,000	120	6,000
Bell Brook, No. 1,	300	12,000	360	14,400	300	12,000	360	14,400	300	12,000	360	14,400
Bell Brook, No. 2,	270	12,150	360	16,200	270	12,150	360	16,200	270	12,150	360	16,200
Glen Wilder,	186	4,650	65	1,625	186	4,650	65	1,625	186	4,650	65	1,625
McIntire, No. 1,	150	12,150	210	17,010	150	12,150	210	17,010	150	12,150	210	17,010
McIntire, No. 2,	300	8,475			300	8,475			300	8,475		
McIntire, No. 3,	100	12,500	300	37,500	100	12,500	300	37,500	100	12,500	300	37,500
McIntire, No. 4,	440	38,000	160	13,800	440	38,000	160	13,800	440	38,000	160	13,800
Morris Run, No. 1,	420	37,000	150	13,200	420	37,000	150	13,200	420	37,000	150	13,200
Morris Run, No. 2,	380	32,000	150	12,600	380	32,000	150	12,600	380	32,000	150	12,600
Morris Run, No. 3,	110	4,620	70	2,940	110	4,620	70	2,940	110	4,620	70	2,940
Porter Bank,	550	18,150	200	6,600	550	18,150	200	6,600	550	18,150	200	6,600
Snow Shoe, No. 1,	600	21,000	200	7,000	600	21,000	200	7,000	600	21,000	200	7,000
Snow Shoe, No. 2,	110	4,620	70	2,940	110	4,620	70	2,940	110	4,620	70	2,940
Sterling, No. 1,	600	25,000	180	7,500	600	25,000	180	7,500	600	25,000	180	7,500
Sterling, No. 2,	460	30,000	260	16,800	460	30,000	260	16,800	460	30,000	260	16,800
Sterling, No. 3,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 4,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 5,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 6,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 7,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 8,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 9,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 10,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 11,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 12,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 13,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 14,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 15,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 16,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 17,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 18,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 19,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 20,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 21,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 22,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 23,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 24,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 25,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 26,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 27,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 28,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 29,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 30,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 31,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 32,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 33,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 34,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 35,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 36,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 37,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 38,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 39,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 40,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 41,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 42,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 43,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 44,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 45,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 46,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 47,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 48,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 49,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 50,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 51,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 52,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 53,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 54,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 55,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 56,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 57,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 58,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 59,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 60,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 61,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 62,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 63,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 64,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 65,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 66,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 67,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 68,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 69,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 70,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 71,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 72,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 73,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 74,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 75,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 76,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 77,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 78,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 79,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 80,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 81,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 82,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 83,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 84,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 85,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 86,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 87,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 88,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 89,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 90,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 91,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 92,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 93,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 94,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 95,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 96,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000
Sterling, No. 97,	1,000	50,000	150	7,500	1,000	50,000	150	7,500	1,000	50,000	150	7,500
Sterling, No. 98,	460	40,000	170	14,800	460	40,000	170	14,800	460	40,000	170	14,800
Sterling, No. 99,	300	11,500	260	10,000	300	11,500	260	10,000	300	11,500	260	10,000
Sterling, No. 100,	240	24,000	400	40,000	240	24,000	400	40,000	240	24,000	400	40,000

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Antrim, No. 1,							250	18,000	300	12,000	1,100	53,900	250	18,000	380	15,200	1,140	55,880
Antrim, No. 2,	150	10,500	220	8,800	990	48,510	300	10,500	200	7,200	380	10,260	250	18,000	380	15,200	1,140	55,880
Antrim, No. 3,	300	10,500	200	7,200	380	10,260							280	9,800	200	7,200	400	10,800
Barclay, No. 1,	160	16,000	180	8,640	320	27,600	160	16,000	180	8,662	320	27,600						
Barclay, No. 2,	180	18,000	230	9,200	330	25,300	180	18,000	230	9,200	330	25,200						
Barclay, No. 3,	210	20,000	200	8,000	370	26,200	200	20,000	200	8,000	370	26,200						
Barclay, No. 4,	184	17,600	190	8,200	320	26,700	184	17,600	190	8,200	320	26,700						
Bennington,	201	28,000	150	7,300	78	26,900	203	27,800	150	7,390	81	27,900	313	15,000	130	5,200	310	15,300
Bernice, No. 1,	160	9,600	30	1,500	225	9,000	180	10,800	25	1,250	225	9,000	180	10,800	45	2,050	240	9,600
Bernice, No. 2,	170	10,200			220	11,000	160	9,600			238	11,900	190	11,400			250	12,250
Fall Brook, No. 1,	375	11,280	380	9,120	370	11,100	375	11,250	380	9,120	355	10,650	375	11,250	375	9,000	360	10,800
Fall Brook, No. 2,	240	14,400	395	9,450	370	12,950	240	14,400	370	9,000	370	12,950	245	14,700	390	9,350	370	12,600
Gaines, No. 1,													154	7,592	165	2,887	362	11,946
Glen White,	180	6,480	75	3,000	295	6,950	165	5,940	75	3,000	275	6,050						
Horseshoe, No. 1,	195	7,020	150	6,000	180	6,480	200	8,400	160	6,400	180	7,500	160	5,760	120	4,800	240	6,000
Long Valley,	250	11,000	160	7,680	300	16,200	250	21,000	130	6,240	210	11,340						
McIntire, No. 2,													240	21,278	290	10,281	470	2,770
McIntire, No. 4,	200	18,252	240	8,729	400	23,968	200	18,252	240	8,729	410	24,511						
Morris Run, No. 1,	420	32,000	156	7,250	780	34,300	300	27,000	160	7,200	600	42,200	440	39,600	160	7,200	800	42,400
Morris Run, No. 2,	400	28,200	165	7,420	760	33,500	290	27,100	140	5,600	670	40,200	420	37,500	165	7,400	600	38,200
Morris Run, No. 3,	405	33,600	150	6,700	710	37,300	320	38,400	155	6,977	870	45,240	380	28,200	145	6,200	620	32,400
Minersville,													60	1,440	50	600	130	1,190
Porter Shaft,	325	8,125			400	9,600	600	18,000			500	20,500	500	10,000			450	11,050
Robertsdale, No. 1,							250	13,500	400	12,000	500	15,000	350	18,900	325	10,750	725	21,750
Snow Shoe, No. 1,							550	19,800	200	7,400	700	25,200						
Snow Shoe, No. 2,	600	21,000	300	10,800	600	21,600	350	12,600	150	5,400	600	21,600						
Snow Shoe, No. 3,	350	12,600	150	5,400	650	23,400												
Somerville,							390	18,016			590	17,847						

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Antrim, No. 1,	200	18 720	380	15, 200	1 120	45,200							210	33 320	400	16,000	1,220	48,800
Antrim, No. 2,							360	21,000	400	16,500	1,200	48,800						
Antrim, No. 3.																		
Arnot, No. 1,	1,113	86 570			1,200	100, 100	1,400	98,000	400	18,000	1,450	108,700	475	16,625			573	17 250
Arnot, No. 2,	330	12,705			400	13 200	450	15,750			550	16 500						
Arnot, No. 3,													1,412	98 875	420	18,000	1,500	112 500
Bennington,	376	15,960	120	5,000	310	15,200	374	16,800	130	5,200	372	16,200	350	15,600	128	4,200	316	15 400
Benedict,													200	7,200	60	3,240	240	9,600
Bernice, No. 1,	180	10 800			230	9,200	170	10 200	32	1 000	210	8,400						
Bernice, No. 2,	170	10,200			225	11,250	190	11,400			228	11,400						
Fall Brook, No. 1,	360	10, 800	360	8, 640	350	10 500	355	10,650	380	9, 120	365	10, 950	370	11,100	370	9,250	360	10, 800
Fall Brook, No. 2,	210	12,600	380	9,120	360	12,600	200	12,000	375	9,000	370	12,950	250	15 600	390	9,350	370	12,950
Fisher,																		
Glen White,	170	8, 120	100	4 000	275	6,600	180	6 480	85	3,400	300	6,600	190	6 840	90	3 600	310	6 820
Gaines, No. 1,	150	7,200	220	4,400	420	13,800	100	4,800	80	1 600	418	13,794	170	8,448	143	2,860	286	9,436
Gaines, No. 2,	175	6,125	140	2,800			190	7,980	140	2,800			165	6,930	209	4,180		
Horse Shoe,	180	6,480	100	3,000	190	5 700												
Long Valley,													200	16 800	150	7,200	180	9 720
McIntyre, No. 1,	130	12 950	270	9,660	420	25 054	200	48 252	140	5,625	350	21 202	130	12,955	270	9,660	430	25,597
Morris Run, No. 1,	300	27,000	150	6,000	000	42,000	400	36 000	150	6 000	700	42 000	440	39,600	155	6,975	870	42 300
Morris Run, No. 2,	325	20,250	140	5 600	620	37 200	420	38,000	170	7,456	650	40 000	435	26,400	160	6 975	860	40,000
Morris Run, No. 3,	400	40 000	125	5,400	720	30,000	410	35 000	150	7,100	630	38,220	420	37,200	155	6,700	810	38,500
Minersville,													90	1 440			45	1 600
Porter Shaft,	525	10,500			500	12,000	500	11,200			480	12,000	550	11,000			500	12,500
Robertsdale,	350	18,000	425	12,750	400	25,000	425	12 750	250	7,500	450	13,500	400	12 000	225	6 750	450	13 500
Snow Shoe, No. 1,							200	7 200			400	14,400	400	12,400	200	6,200	660	21 000
Snow Shoe, No. 2,							406	14 400	200	7,200	409	14,456	300	10,800			550	19 800
Tunnel Mines, No. 1,													200	22,000	250	12,550	460	24,000
Tunnel Mines, No. 3,													400	44,000	240	11,760	660	39,000

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Antrim, No. 1,	310	22,320	400	16,000	1,200	4,800	301	21,600	390	15,600	1,150	46,000	300	21.600	400	16,000	1,150	46 000
Antrim, No. 2,	..	..	..				.	..	..		..	..	2.0	7 000			300	8,100
Arnot, No. 1,	1 400	96 875	410	18,450	1,450	108.750	.	.	..	..	..	..	1,420	103 3.0	420	18 000	1, 475	110 625
Arnot, No. 2,	450	15 750			540	16 200					..		450	15 750			600	18,000
Bennington,	376	16,700	129	4,500	316	15 400	213	28 900	142	6 700	81	27,800	375	16 600	57	2,400	313	15,000
Benedict,	..	..	..	..	.	..	250	9,000	100	2 000	240	8 600						
Bernice, No. 1,	..	..	..	..	.	..	190	11,400	45	2,250	240	9,600	195	11.700	45	1,750	235	9 400
Bernice, No. 2,	..						185	11,000			230	11 500	180	10 800			250	12,500
Fall Brook, No. 1,	355	10 650	370	8.880	340	10.200	370	11 100	380	9,120	340	10, 200	365	10 900	380	9 120	330	9,900
Fall Brook, No. 2,	240	14 400	380	9,120	360	12,600	235	14,100	390	9 350	370	12.950	230	13.800	380	9,120	360	12 600
Glen White,	170	6,120	75	3 000	300	6,000	180	6,480	70	2 800	295	6 490	180	6 480	80	3.200	295	6 480
Gaines, No. 1,	110	5.280	120	2,400			235	10,626	187	3.740	418	13 794	219	9.198	131	2.620	473	15,609
Gaines, No. 2,	120	7,140	130	2.600	330	10.890	89	4,272	99	1 980	..	..	110	5,280	99	1 980		
Horse Shoe,	147	5 295	120	3 960	145	5.365												
Long Valley,	224	18,509	165	8,000	185	19 240												
McIntyre, No. 1,	220	18,480	170	8 160	190	19,266												
Morris Run, No. 1,	440	39.600	160	7 200	870	42,600	380	27,400	145	6 570	670	33 700	439	32 420	155	7.240	860	34 300
Morris Run, No. 2,	435	36,000	155	6 975	860	37 560	400	36.000	150	7,200	420	38,400	440	29,600	160	6 975	840	30,200
Morris Run, No. 3,	440	27,000	150	7,200	830	28 400	410	34 400	160	7 200	410	32 600	420	28 000	155	6,760	865	34 980
Porter Shaft,							340	13.600			350	14 000	400	16 900			500	2 000
Robertsdale,	450	13,500	450	7.200	500	15 000	275	14 850	300	9,000	530	15 900	250	15.600	600	9.000	343	10,290
Snow Shoe, No. 1,	400	14.400	200	7,200	600	21.600	500	18 000	250	9,000	600	21 000	500	18 090	300	10 600	750	27 100
Snow Shoe, No. 2,	200	7 200	.		400	14 400	200	7 200			500	18 000	400	14 400	60	2,160	500	18.000
Tunnel, No. 1,	255	28 820	210	12 600	500	30 000	190	20 900	200	12 000	400	24.000	210	23,100	190	11,400	475	28 500
Tunnel, No. 2,	270	29.700	200	12 000	460	27 600	250	27 500	190	11.400	500	30 000						
Tunnel, No. 3,	300	33,550	250	13,500	490	29,400	300	33,000	230	13 800	560	33 600	215	23 600	230	13.800	570	34 200
Tunnel, No. 4,	..	..	..	..	..	..	..	..	..	..		..	200	22,000	180	10,800	430	25 800

LIST OF ACCIDENTS *occurring in the mines of the Fourth Bituminous Coal District of Pennsylvania, for the year ending October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
Nov. 15	John Hennessy,							Hurt in back by fall of slate.
Dec. 10	William Bennett,	50						Hurt in back by fall of slate.
Jan. 22	Gus Anderson,	24	Single,					Injured by fall of coal and boney; inflammation of bowels ensued from which cause he died February 7.
23	Charles Lynch,	16	Single,					Jaw-bone broken by a kick from a mule.
24	James Snedden,	14	Single,					Slightly injured by fall of slate.
Mar. 7	Lars. Toline,	60	Married,	2				Badly crushed by fall of slate; died next day.
12	Andrew Ross,	50	Married,					Leg bruised by fall of slate.
27	Roger Welch,							Injured by fall of slate.
April 9	Andrew Wylie,	20	Single,					Back injured by fall of rock while putting up a prop to support it.
10	Michael Cooney,	50	Married,	3			Apr. 15	Injured by fall of clay from the effects of which he died April 15; verdict of the jury, purely accidental.
May 1	Joseph Whalen,	13	Single,				May 1	Killed by fall of ripping.
2	George H. Todd,	54						Leg broken by fall of slate.
19	E. G. Fisher,	35						Leg hurt by fall of coal.
June 6	John Flynn,	16						Leg broken.
14	David McDonald,	13						Killed by fall of blacksmith coal.
14	Archie McDonald,		Married,					Ankle broken by fall of blacksmith coal.
17	Michael Welsh,	35	Married,					Injured by fall of slate and coal; died from his injuries June 27.
18	Robert Bones,	45	Married,					Fingers mashed by fall of coal.
	Henry Bellman,	32	Married,					Thumb cut off by mine cars.
July 22	A. J. Sandine,	22	Single,				July 23	Killed by fall of coal.
Aug. 25	Benjamin Black,	50	Married,				Aug. 25	Killed by fall of coal from slip.
26	Patrick Kennedy,	24	Married,					Pinched between cars.
Sept. 17	A. Baxter,	41	Married,					Foot badly crushed by fall of coal.
18	Jacob Yaweoski,	16	Single,					Leg broken by fall of coal.
Oct. 20	L. D. Powers,	16	Single,					Collar-bone broken by loaded cars.
22	Michael Carmen,	40						Crushed by fall of roof.

FIFTH DISTRICT.

To the Honorable J. SIMPSON AFRICA,

Secretary of Internal Affairs of the Commonwealth of Pennsylvania:

SIR: In compliance with the bituminous ventilation law, I herewith submit my annual report, commencing November 1, 1883, and ending October 31, 1884.

There are ninety mines in the district; seventy-five of them come within the provisions of the law; ten mines, which were partly worked during the year, employing less than eleven persons inside, are exempted under the act, and there were five mines in the district which were not operated during the year; by far the greatest number of the mines have not been worked to their full capacity, nor anyway near to it.

Forty fatal and sixteen non-fatal accidents happened during the year; all of the fatal accidents occurring in Fayette county, thirty-four of them by gas explosions, five by falls of coal roof and slate, and one by pit-wagon, as will be seen under the head of fatal accidents.

I sent out seventy-five blank circulars for annual report showing production, persons employed, and days worked during the year; thirty-three of them were returned, and nine of them in part useless to make averages from.

Twenty-four mines in Fayette county report an output of 2,143,444 tons.

Twenty-four mines in Fayette county report worked during the year, 6,030 days.

Average number of days worked by each of those mines, 251¼ days.

Average output per mine, 89,31' ⅙ tons.

Number of coke-ovens in the entire district, 7,442.

Number of miners in the district, approximated, 3,860.

Number of day hands inside and other employés, approximated, 2,300.

I have given a description of the mines visited in the district, and the fatal accidents, with plans of shaft No. 2 of the Connellsville Coal and Iron Company, and the Youngstown mines, where fatal explosions by gas occurred during the year, a plan and explanation of an improved mode of working rooms, by Charles Connors, which will appear in the report, and the decisions (and legal proceedings) instituted by me during the year.

Yours very respectfully,

AUGUSTUS STINNER,

Inspector Fifth Bituminous District.

CONNELLSVILLE, *December 3, 1884.*

Description of Mines on the Mount Pleasant Branch Railroad.

Diamond mine.

I have visited the mine three times during the year; found it, on my

first and second visits, in a rather bad condition, but found it, on my last examination, in good condition, an air shaft having been sunk during the summer in the highest part of the mine, which has greatly improved the mine.

Painter mine.

Visited this mine four times during the year, and generally found it in poor condition regarding ventilation. Found miners working beyond the air, which I gave orders to be stopped. A small furnace has been built of late, which helps the ventilation to some extent at present on one side of the mine. The mine has the appearance of poor management in regard to ventilation.

Dexter mine.

Visited the mine once and it employed only eight persons, consequently it did not come under the law.

Kiffer mine.

I gave the mine one visit, the mine having been idle most part of the year; found it in fair condition regarding ventilation.

Furnace mine.

Found this mine in good condition, and well ventilated. Visited the mine twice.

Valley mine.

Examined the mine twice; found the working and system of ventilation greatly improved, and the mine in good condition. Regarding ventilation, two overthrows have been made in order to make the furnace effective. Mr. James Jackson, mining boss, deserves credit for his efforts in improving the mine.

Tip Top.

The mine has been idle part of the year. I gave it one visit, and found it in a very fair condition.

Summit.

The mines are in good condition in every respect. The overthrow system is used in the new workings, and the appearance in general of the mine is a credit to the mining boss, Mr. J. Moody. I examined the mine three times during the year.

Eagle.

Is in a fair condition, but will, in the near future, be still further improved; made three visits to this mine.

Foundry.

Is in good condition, regarding ventilation, and greatly improved since last year. I gave it two examinations.

Morgan.

Found the mine. on both of my visits, in a fair and healthy condition regarding ventilation, and is well taken care of by the management.

White.

This mine has been partly idle during the year. In a visit that I made, I found that there is room for improvement; mainly, in providing an inlet for pure air, the present inlet coming through old workings, taking with it the noxious gases.

Frick.

Found the mine, on two of my visits, in a reasonably fair condition, but on my last visit, found it in rather bad condition regarding ventilation. No difference in the temperature, inside and outside, was the cause of it, the mine being worked by natural ventilation.

Clinton and Franklin mines,

I found, on both of my visits, in perfectly good order, regarding ventilation and otherwise.

Mines on the Baltimore and Ohio Railroad, and Hickman Run Branch.

Henry Clay.

Found it, on both of my examinations, to be greatly improved from last year. Ventilation is very fair in some parts of the mine, while in other parts it is not so good. I am informed, however, that it will be ventilated by artificial means as soon as the mine is systematized.

Tyrone.

On one of my visits, in winter time, found it exceedingly well ventilated, but on my other visit, in September, found part of the mine poorly ventilated, and gave instructions to the mining boss how to remedy the matter.

Sterling No. 1, No. 2, and No. 3,

Are all in fair condition, regarding ventilation. The No. 1 mine is notable for its nice and clean roads; the headings are driven with precision and exactness; drains are all in good order. During the summer substantial improvements were made here, in hauling out the coal with stationary engines and tail rope, the good condition of the mine road, and its good headings, adding greatly to its success. I have visited the mine twice.

Cora.

On my first visit to this mine, found it in very good and safe condition. On my second visit, the mine did not employ enough persons to come under the law.

Spring Grove

Is nearly exhausted, only pillar-work is left to be done. It is one of those mines that was neither worked by any system or forethought. Visited the mine twice.

Jackson

Is also a mine that is worked without much system. However, on both of my visits and examinations, found it rather in good condition regarding ventilation, the mine at no time employing many hands.

Clarrisa

Is a new mine, on the other side of the river from Dawson, and is worked by the double-heading system, is well taken care of, and I found it, at two different visits, in good condition regarding ventilation and drainage.

Fort Hill.

Found this mine, on both of my examinations, in rather good condition relating to ventilation; found, on my last visit, however, that some miners were working beyond the air; gave prompt orders to at once remove them from there into a better atmosphere.

Connellsville Shaft.

This mine is partly worked by the single-heading and double-heading systems. The mine produces a great deal of water, and, in this respect, causes a good deal of expense. Found this mine well ventilated on both of my visits, and, as a precautionary measure, the mine is examined in the morning before the miners enter.

Mines on the South-West Pennsylvania Railroad.

Grace.

Have made five visits to this mine, and found it, in general, in bad condition. Gave orders several times to remove men from beyond the air. The mine has been a source of trouble to me. Four mining bosses have been there during the year; from present indications, it seems, however, that the fourth one may stay a while and put the mine in order. He has built a nice furnace, and, in the near future, the mine will be well ventilated.

Coal Brook.

Found the mine, on both of my examinations, fairly ventilated and well secured.

Plummer.

Visited this mine three times; found the ventilation and drainage good and the mine well managed.

Trotter.

This mine is well ventilated, well managed, and well taken care of in every respect. At present, as a precautionary measure, the entire mine is worked with safety lamps. At the bottom of the shaft, it is lighted with the electric light, and certainly is a great improvement to all concerned—mainly to those who perform their daily labor at the bottom shaft. I am informed that a twenty-five-foot diameter fan will be erected as soon as possible. I have visited the mine four times.

Leisenring No. 1.

I visited this mine three times, and found it in excellent condition. The mine is well ventilated, well taken care of. No expense is saved in securing the safety of persons employed inside. A twenty-foot diameter fan has been erected during the year. A spirit of progress is shown here in mining, and the management in general is possessed of both practical and scientific knowledge.

Leisenring No. 2

Is the mine where the explosion occurred last February, (see further description under head of fatal accidents.) Visited the mine in March, in company with others and Mine Inspectors Watt and Louttit, the mine then being ventilated the same (exhaust steam) as it was the time of the explosion. We found in the heading where the explosion had occurred a velocity of 210 feet per minute; by cross sectional area, 63 feet, or, in all, 13,230 feet per minute. At outcast we found 21,262 feet per minute. Saw the indications of gas in rooms Nos. 2 and 3 in the fourth butt-heading, the place where the gas had been generated and caused the explosion. During the summer, also, a twenty-foot Guibal fan has been erected. The fan is a success, and on one of my two visits, which I paid the mine since the fan was in operation, I found about 100 feet from outcrop 150,000 feet per minute at 90 evolutions per minute. Since the explosion, Mr. Mark Watson has been employed as fire-boss. The mine has a solid appearance, inside as well as outside, seldom seen in the bituminous region, and is well-laid out; in fact, in my district, no better system is in existence. Improvements, however, might be made with advantage.

Wheeler.

In my three visits to this mine, found it in fair condition; good and solid improvements have been made of late. The double-heading system is here in operation, both in the main and butt-headings. Of late, a six-foot Murphy fan has been placed in position, and the mine is well ventilated and well taken care of. The pillar work is done with safety-lamps.

Morrell

Is at present in excellent condition, and well ventilated. Each side of the

slope is ventilated by itself. The slope is the out-cast since the new fan, (an eight-foot Murphy,) which was put up during the fall, has been in operation. I am told that in a short time the entire mine will be worked with safety-lamps. The mine is well managed. I visited this mine three times.

Uniondale.

I have visited this mine five times, and found it in bad condition. It is an old mine, and has heretofore been worked without system, and, like all the mines in this neighborhood, has been driven with no forethought whatever, and to put it in any kind of shape would be rather expensive, and no matter how well this faulty work may be patched, it will never be as secure and safe as a mine ought to be. It is, at present, fairly ventilated.

Anchor.

On my first visit, found the mine in a very bad condition. On the next visit, however, it was a great deal improved in every respect, and the mine had enough of air for the men required by the law. I visited the mine three times.

Dunbar Coke Works.

I visited this mine three times, and found ventilation in fair condition. The slope has been extremely hot, and it was a hardship to travel it. No man-way was provided for on my first visit; but had nearly completed it when a fire broke out in the old working, and the mine at present is sealed up in order to subdue the fire. The slope is down about 2,300 feet, on an average of 10 feet deep to the 100 feet.

Hill Farm.

I have been at this mine four times, and on two of my examinations found it in a miserable condition. However, on my last two visits I found it satisfactory and greatly improved, and it is a credit to the new superintendent, Mr. Lang, who took charge last spring.

Ferguson.

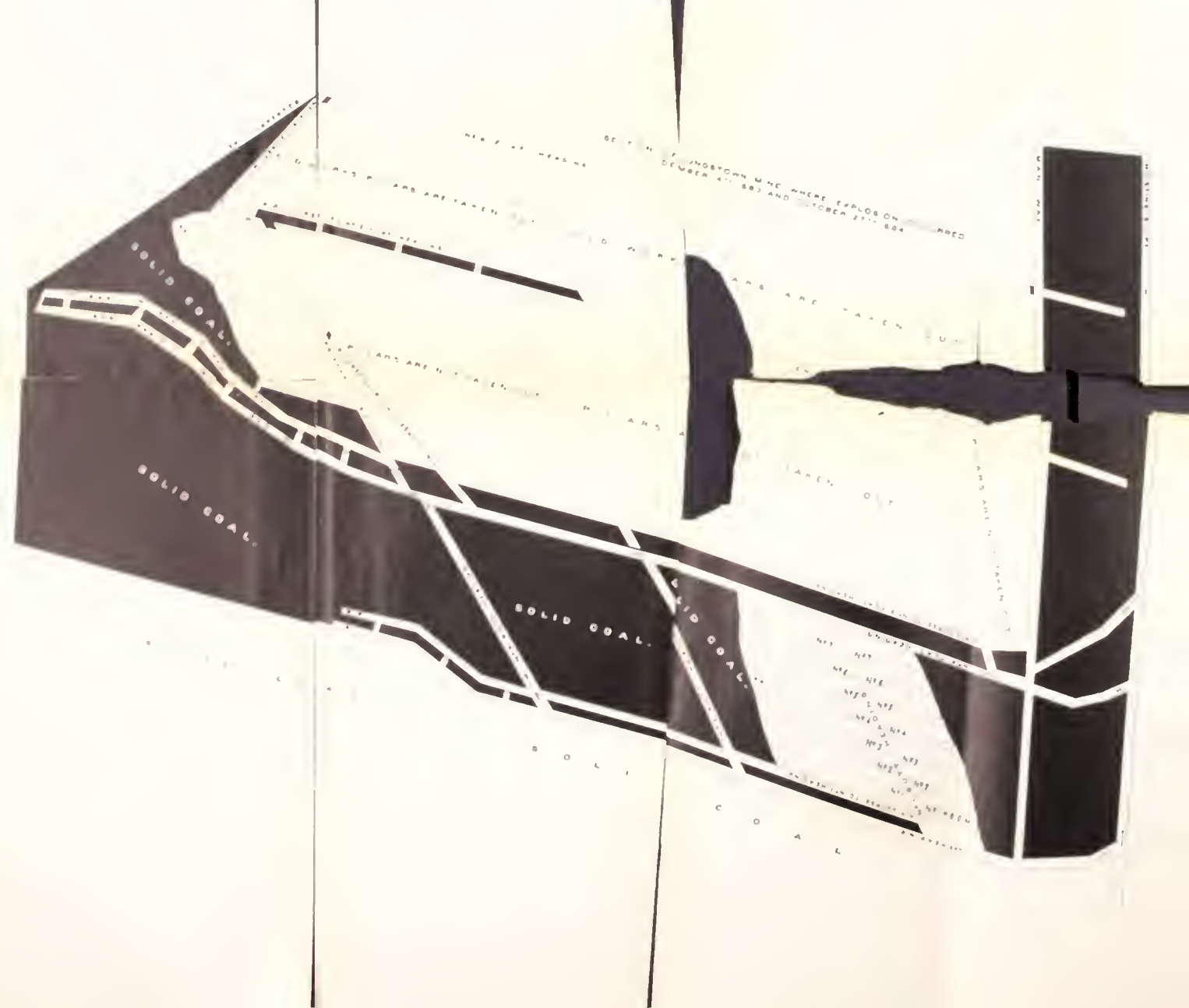
I made two visits; found it always fairly ventilated; but want of forethought in mining had caused a crush, and put the mine in a rather bad shape.

Percy

Is now in very good condition. A traveling road has been made, and a furnace built. They make use of the double-heading system, and it is well ventilated and properly cared for.

Youngstown.

I have visited this mine eight times. It is the mine where the explosion took place on October 27. (See explanation of it under the head of "Fatal


SOLID COAL.
SOLID COAL.
SOLID COAL.
SOLID COAL.

Accidents.") I found the mine, in general, well ventilated; but the management was either ignorant in the extreme, or exceedingly reckless. A man was also killed in this mine by an explosion on the 4th of December, 1883, (explanation to be seen under the head of "Fatal Accidents,") and another person lost his life in this mine by a fall of coal. Sixteen persons have lost their lives inside of a year in this mine.

Lemont.

I visited the mine three times. On two of my examinations I found the mine in an unsatisfactory condition, so much so that I was forced to give the owner a "legal notice" to improve the mines, which has, to a great extent, been done. From indications at present, it seems that the mine will be better taken care of than it has been heretofore. This mine had a fall last winter to the surface—causing the surface-water to come in on them, creating expense, trouble, and delay in getting the neglected mine in order.

Stewart Furnace Company.

In my three visits, I always found the mine in pretty fair order. However, a change of the system in ventilation is necessary for this mine.

Leith.

I visited this mine three times. It is a poorly-planned mine from the start. While the ventilation is within the letter of the law, nevertheless changes and improvements should be made to make the ventilation more effective. I have so informed the management of the mine on each of my visits, and, I have reason to believe, that if somebody else (besides the company) would pay for the effective changes to be made, it would have been done long ago.

Redstone.

In my three visits to this mine, I found it always in very fair condition. The safety of the men is well taken care of, and a solid, good improvement has been made during the summer, in sinking a shaft, which will be valuable to the mine, both for ventilating and mining purposes.

Oliphant.

Found it on my two visits in very good condition, and the inside management of it rather a credit to the mining boss, John Jenkins, who seems to know from the appearance of the mine when he has ventilation.

Fair Chance.

Found it, on my first visit, not in good condition, but seemed to be greatly neglected, both in ventilation and cleanliness. I found it, on my second visit, somewhat improved; but it will take some time to get it in good order.

Bliss & Marshall.

Visited the mine twice, and found it in very fair condition.

Mines on the Monongahela River.

Tremont.

This mine is worked by the parallel-heading system, and found it, on my three visits, always well ventilated, and in satisfactory condition.

Little Pittsburgh.

Found it, on my first and only visit, in very satisfactory condition.

Little Redstone.

This mine has been idle most of the time during the year, so much so that I gave it but one visit in the spring, and found it in a neglected condition.

Carondelet

Consists of two mines—the old opening and the new mine. I found the old mine in good order, regarding ventilation; had considerable trouble during the summer, caused by a squeeze coming on the return air-course and partly closing it, and the explosive gas making its appearance, caused by the fall. However, the damage was repaired, and liability to accidents overcome.

The new mine is well laid out; found it, however, on my second visit, in very bad order regarding ventilation. A small furnace has since been built, and the necessary ventilation temporarily secured. I visited the mines three times.

Turnbulls.

Found, on my first examination, the mine not in good condition. On my second visit, however, found it improved, and well ventilated in most parts of the mine. Some miners were working beyond the air. I gave orders immediately to have them stopped. At present the mine is ventilated by a basket furnace, but in a short time, I am told by one of the owners of the mine, a fan will be provided.

Excelsior.

On my first visit I found this mine in a bad and dangerous condition; had some trouble in getting the dangerous part of the works stopped. I had called, under the law, on Mine Inspector James Louttit to visit the mine, in order to apply to court for an injunction, so as to suspend the work therein. In the meantime, however, a fall occurred, and caused the surface water to come into the mine, which stopped the operation of the mine. On my second examination I found the danger removed, (which was a squeeze on the heading which had been abandoned,) but found the mine poorly ventilated. On my third visit, two weeks after the second examination of

the mine, I found that the work was almost completed to give the mine better ventilation.

Bargeddie.

Found it on my first visit in fair condition regarding ventilation. On my second examination the mine was operated by a joint stock company of miners. The little furnace was not fired up, and, consequently, little air was passing.

Snow Hill.

Found the mine on both of my visits in good condition, more so, however, at my last visit, a furnace having been built during the summer 23 feet length of arch, 6 feet of face, by 7 feet grate bars. The amount of air at the furnace I found to be 26,790 feet per minute. The mine is a credit to its owners as well as to the management.

Merchant.

This is an old mine, employing but eleven persons. On my first and only visit only pillar work was being done. It seems the mine was never worked with any system, and in the language of the present operator, who is mining himself, "the air gets in somehow."

Alps.

I visited the mine once. It has been idle all summer and fall, and is rather an old mine, and will be finished in a short time providing it is operated. I found the mine very fairly ventilated.

Cedar Hill.

On my first and only visit I did not find it in good condition. I wrote to the owner to provide means for the better ventilation of the mine, which I think, from information received, was done. The mine has been idle most of the time.

Garrows.

On my first visit I found the mine not sufficiently ventilated; while there was a small furnace, it had not been fired up. The mine is partly operated on the parallel-heading system. On my second visit I found the mine not much better, it being then operated by a joint stock company of miners. I found the furnace again neglected; but I have reason to believe that henceforth, under this company, the mine will be well ventilated.

Climax.

I visited the mine twice, and it is very fairly ventilated; working on the the parallel system, and since it is a slope, I gave strict orders, in accordance with the law, to make an available traveling road.

Umpire.

I made two examinations of this mine, and found it in good order regarding ventilation.

Mines on the Berlin Branch, Baltimore and Ohio Railroad.

None of these mines have employed during the year the number of persons which would bring them within the law of ventilation.

Mines on the Salisbury Branch, Baltimore and Ohio Railroad.

Tub Mill Run.

The mine is in fair order; employs from twelve to fifteen persons inside; ventilated by natural ventilation. I found at the end of working headings 3,000 feet of air passing per minute. At outcast I found 6,500 feet per minute.

Cochran.

On my two visits I found at neither visit the mine in good condition; it generates a good deal of water. The mine will soon have a back opening which will improve it in respect to ventilation. No system whatsoever is practiced here.

Fairview.

Found it on both visits in first-class order. The mine is well taken care of and is a credit to the management.

Hocking & Co. Mines.

On my first examination I found enough of air in the mine, but not distributed to the places where the mines were working. On my second examination I found the mine in a fair order in every respect.

Shaw.

I visited the mine twice, and it is in very good order. On my last visit they were at work in building a new furnace, which will ventilate the mine. Heretofore a basket furnace was used. This and Fairview mines are the best in Somerset county.

Casselman.

On my first examination, I found this mine in a horrible condition; little or no air in it, and almost impossible to get through the water. The mine had the appearance of a penal institution to punish criminals. On my second visit, however, the mine was in fair condition. The company will soon abandon this drift mine, and operate a slope near by, which has been sunk during the summer.

Hoblitzel Mine

Is a slope 700 feet in length; have two openings and a traveling road. It

is a low vein of coal only 3 feet in height, and is, under the circumstances, in very fair order. Visited the mine twice.

Mines in Bedford County.

Mount Equity.

The mine is in a long distance, and found it, on both of my visits, well ventilated, and in every manner well taken care of. The mine requires a good deal of attention.

Brown's.

Found the mine, on my two examinations, very fairly ventilated. I gave strict instructions in regard to second opening, which at once were complied with.

Maher Mine.

Found the mine well ventilated. Only employs 12 persons inside including boys.

Defiance.

Found this mine in very bad order in regard to ventilation. I gave strict orders to the mining-boss to improve the ventilation. Employs 13 miners inside.

Everett Iron Company Mines

Is a new drift mine, and consists of three separate openings at a place called Long's run. Commenced in June, 1883, opening the mines and building road outside, and have built 110 coke ovens since. In No. 1 opening a good-sized furnace has been built, and the appearance of the mine indicates that somebody of ability in mining has charge of it. On my second visit the mines were not in operation. Only heading work has been done in order to put the mine in good working order.

New Mines Opened During the Year.

A slope mine has been opened during the summer near Brownsville, on the Monongahela river, by George E. Hogg, and will be in charge of C. L. Snowdon, and they are at present opening up the coal.

A drift mine was opened by Hagan & Weil, situated at Smock's station, on the Redstone branch of the P. V. and C. R. R. in Fayette county. They employ 16 miners at present, and the coal is mainly consumed at Uniontown for private use.

DESCRIPTION OF FATAL ACCIDENTS.

Accident No. 1.—William Hone, miner, was killed by an explosion of gas at the Youngstown mines, Fayette county, on December 4, at about 5.30 o'clock, A. M., in No. 5 flat heading, on the right-hand side of slope. Mr. Hone was the heading driver, and the accident occurred near the last break-through in No. 5 flat—it was only to be driven a few more yards, when

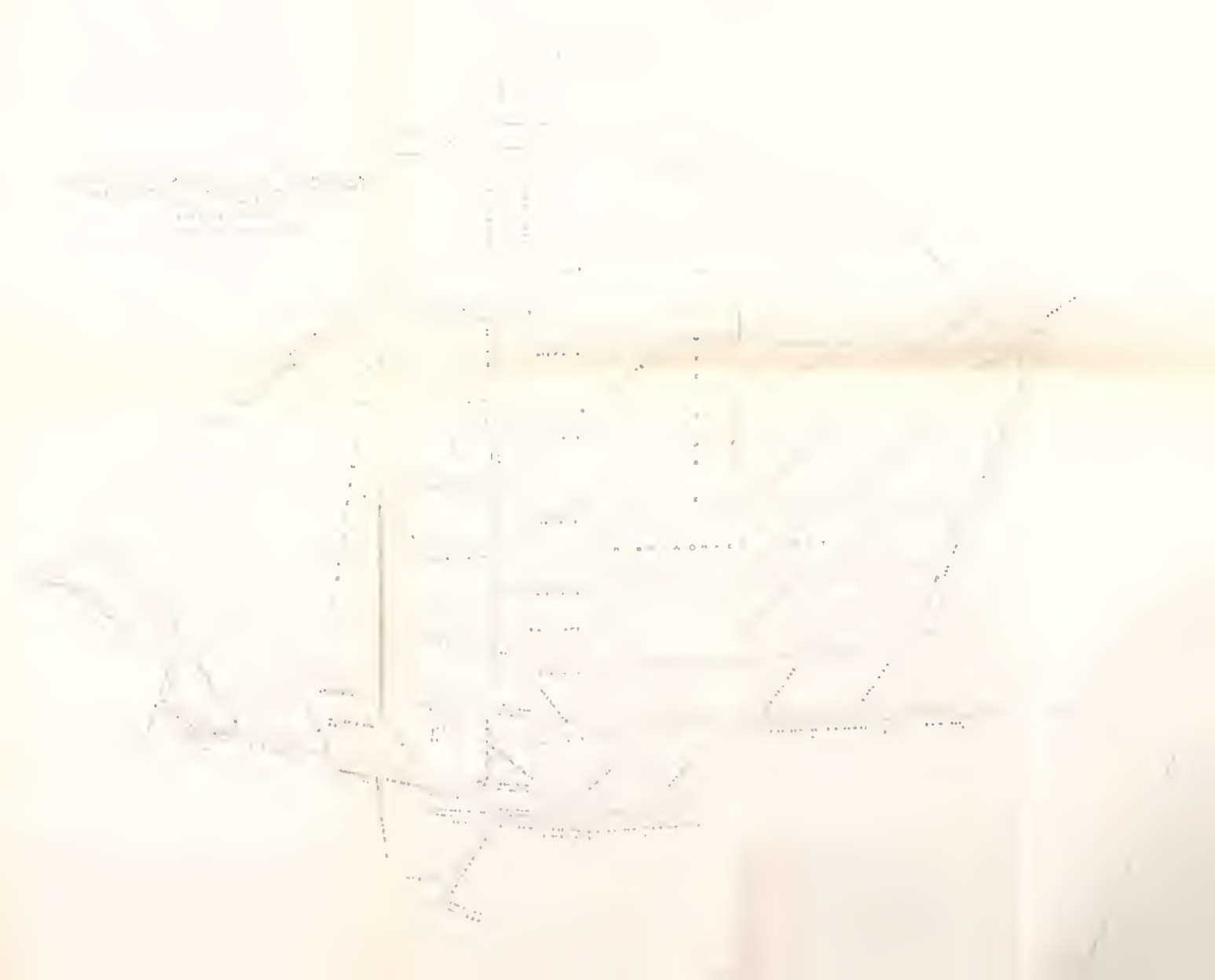
it would intersect with the line air course on that side. Mr. Hone had disregarded the law, and also the rules, in going there before the place was examined by the fire-boss, as it was known to him that the place generated more or less gas. I examined the mine and the said heading on the next morning, and found his dinner-bucket, which he had taken in with him on the fatal morning, undisturbed near the end of the heading, at the last break-through into the air course or parallel heading. He was found about forty-five yards from the end of the heading, and his death was caused from the after gases; it was generally believed by the management that the gas had come from a fall, which, however, I don't think was the case, since the mine has a dip, on an average, of $6\frac{1}{2}°$, and, consequently, the gas would have gone upwards, in place of downwards into No. 5 flat heading. I think the gas had generated in No. 5 flat, and its parallel thereto, during the night, and the ventilation having been disturbed, in not having the doors closed, caused the accumulation of the gas. There was nobody else injured; the rest of the men working on this side of the slope had not gone in yet. Immediately, I gave orders, under section fourteen of the bituminous ventilation law, that suitable doors (for not obstructing the ventilation) be put on all openings, and securely locked, and only be opened by the fire-boss, after the morning examination.

[Copy.]

COMMONWEALTH OF PENNSYLVANIA, } *ss:*
Fayette county, }

An inquisition indented and taken at North Union township, in the county of Fayette, the 4th day of December, in the year of our Lord one thousand eight hundred and eighty-three, before me, John D. Sturgeon, coroner of the county aforesaid, upon the view of the body of William Hone, then and there lying dead, upon the oath of Aaron Darby, William S. Jobes, William R. Cross, C. Harford, Benjamin Williams, and John Blackburn, good and lawful men of the county aforesaid, who, being sworn and affirmed to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said William Hone came to his death, do say, upon their oath and affirmation, that the said William Hone came to his death accidentally, by the explosion of fire-gas in the Youngstown mine, December 4, 1883, and, from the evidence, we would exonerate the company and employés from all blame. In witness thereof, the aforesaid coroner and the jurors aforesaid have to this inquisition put their hands and seals on the day and the year, and at the place first above mentioned.

JOHN D. STURGEON, *Coroner.* [SEAL.]
BENJ. WILLIAMS, [SEAL.]
W. R. CROSS, [SEAL.]
C. HARFORD, [SEAL.]
AARON DARBY, [SEAL.]
W. S. JOBES, [SEAL.]
JOHN BLACKBURN. [SEAL.]



ACCIDENT No. 2.—A. H. Chidester came to his death in the Frick mines, on December 4, while drawing pillars, he having set a break, and then went beyond the break or row of posts to work out a small support of coal, in order to get a fall of roof coal, and in so doing he was caught, the roof falling on him, and for the careless act lost his life. Mr. Chidester had for some years been drawing pillars, and had experience in that part of mining.

[Copy.]

Connellsville, Fayette county, Pa.:

An inquisition indented and taken at Broad Ford, county of Fayette, on the 4th day of December, 1883, before R. Campbell, a justice of the peace in and for the county aforesaid, upon the view of the body of A. H. Chidester, then and there lying dead, and upon the oaths of J. W. Ralsbon, J. Eccles, John Arnold, H. Dill, P. Soisson, and James C. Long, good and lawful men of the county aforesaid, sworn to inquire on the part of the Commonwealth how and in what manner the said A. H. Chidester came to his death, do say, upon their oaths, that the said A. H. Chidester came to his death by a fall of roof coal at Frick's mines by his own carelessness, in going into the place he was working in, after the props were taken out, to take down roof coal, which he should not have done, and it is the opinion of the jury there can be no blame attached to the company in this case.

In witness whereof, as well the aforesaid justice as the jurors, have to this inquisition put their hands and seals the day and year and at the place first above mentioned.

R. CAMPBELL, *J. P.*, [SEAL.]
J. W. RALSBON, [SEAL.]
H. DILL, [SEAL.]
P. SOISSON, [SEAL.]
JOHN ARNOLD, [SEAL.]
JAMES LONG, [SEAL.]
JOHNSTON ECCLES. [SEAL.]

ACCIDENT No. 6 was the fatal mine explosion on February the 20th at about 6.30, A. M., at West Leisenring shaft No. 2, of the Connellsville Coal and Iron Company, whereby 19 lives were lost, (mainly by being suffocated,) 10 of whom were married, leaving 23 orphan children; the others were single men. At the time of the accident, the mine was worked, also, at night in driving the headings. It is a new mine; only been in operation at the time of the accident nine (9) months, and is operated with good and substantial machinery. I at once started for the mine, when learning of the explosion, and came to the mine abont 20 minutes after 1 o'clock, P. M. All the dead, by that time, had been taken out. I at once, with a few others, went down into the mine, (the shaft being 405 feet deep from the level of the ground,) to examine into the cause of the explosion. Coming to No. 4 butt, south heading, it was very perceptible that the explosion had occurred there. In examining the rooms here, we found the gas in

Nos. 2, 3 and 4 rooms, as will be seen in the plan of this mine. The pillars were nearly all cut through in the rooms; in some of them twice. In the room No. 2 and No. 3, the gas was undoubtedly generated that caused this explosion. It could plainly be seen that, in the rooms Nos. 2, 3, 4, 5, on No. 4 butt, south heading, a squeeze was on the room pillars, and a very soft bottom heaving up—so much so that rooms Nos. 2, 3, 4, 5 had been standing idle for some time, the miners having left them and gone to work at other rooms in the mine—the said butt heading having considerable of a raise from the main heading, and the rooms also the same, it is, therefore, not unlikely that the gas made its way into Nos. 7, 8, or even 9 room, and may have been ignited in any one of those rooms, while it may also be possible that some one set it on fire while hunting for rails in some of those idle rooms, James Duffy having quit room No. 2 six days previous to the explosion. No. 6 room was the first working in that heading. The miner working in that place, however, was saved. He had come into his room part of the way when he thought he heard the roof cracking, and, as he claimed, smelled the gas; went back to the bottom of the shaft, waiting to see the mining boss, to show him another place to work in, and while there waiting the explosion happened. The 19 men killed worked in the following places, to be seen and marked on the plan: In No. 4 butt, south heading, Thomas McGeary, working in No. 7 room, and was very much burned; William Davis, in No. 8 room, and was badly burned; John Murray, in No. 9 room, and was also burned. A boy, working in No. 10 room, was saved, and went to No. 11, his uncle's room, and both got out safe. Mike Repko was working in No. 12 room, and was suffocated; John Hart, in No. 14, and was suffocated; George Kallas, in No. 15, and was suffocated; Au. Warmes, in No. 16, and I was informed that he was badly burned, and was found near No. 5 room in that same heading he worked in. It might have been he who ignited the gas while hunting rails in those idle rooms. He would not have been burned had he been in his room. Daniel Buckner was the No. 4 butt-heading driver, and was suffocated; A. J. Hackney worked at making a cut-through near the end of No. 4 butt heading, and was suffocated; Richard Bossley, the No. 4 butt-heading driver was saved; John Buckley, working in No. 3 butt, south heading, room No. 22, was suffocated; David Lloyd, in No. 18 room, same heading, suffocated; Peter Waters, in the same heading, room No. 15, was suffocated; Mike Heffron, same heading, No. 14 room, suffocated; Gary May, worked in the same heading, in room No. 9, and was suffocated; Patrick Kennedy, in the same heading, room 7, was suffocated; James Baker and James Tracy were day hands, and were found rather badly burned in main heading, about equal distance between No. 4 and No. 5 butt-headings; Joseph Backos was the No. 5 butt, south heading driver, and was found suffocated near where Tracy was found; William Searing was the No. 6 butt south heading driver, and was found suffocated near Backos and Tracy. It was not known in the excitement when the dead bodies were found who

SHAFT Nº 2
OF THE
CONNELLSVILLE COAL & IRON CO.
EXPLOSION FEBR. 20TH 1884.

TRACK SOUTH
EMPTY
SHAFT
DOOR
DOOR
AIR SHAFT.
Nº2.BUTT SOUTH.
Nº1.BUTT SOUTH.
MAIN BUTT
PUMP
HEADING
DOOR
DOOR
EMPTY TRACK
NORTH
STABLE.
DOOR
Nº1.BUTT NORTH.
DOOR
Nº2.BUTT NORTH
MAIN
FACE
HEADING
N

they were, excepting the four mentioned. In No. 4 butt, south heading, the dead bodies found were at No. 3 room in the heading; two others at Nos. 4 and 5 rooms; one at No. 7 room; one in the entrance of No. 9 room; one at No. 10 room; one at No. 12 room; one in the mouth of No. 14 room. In No. 3 heading, one was found at No. 17 room; one at No. 9 room; one inside of No. 8 room; one at No. 7 room, and one at No. 5 room; and two were found in No. 1 room, between No. 3 and No. 2 butt, south heading. Thomas Wilson was found about noon midway in the No. 1 room, between 2 and 3 butt headings, still living, and was brought out, and in a few days got well. Twenty-eight persons saved themselves in the fourth and No. 3 butt, south headings, as also did the two main-heading drivers on that side. The rest of the mine had not been affected by the explosion.

I am of the opinion a great many more could have saved their lives had they known something about explosive gases, and the effect thereof. I have no doubt, if the truth was known, many of the poor fellows that lost their lives, wasted their time in trying to light their lamps again, in place of getting out of there as quickly as possible in the dark, providing they were acquainted with the road. Some of them had become miners but recently; knew nothing about mines or mining, or its danger; some of them never heard tell of a coal mine, and, far less, had never seen one, until they came to this country; how can it, in all reason, be expected that such a class of men could save themselves in a time of an explosion, even if there is a chance for life?

As to the cause of the explosion, I am certain, as already stated, that the gas generated in Nos. 2 and 3 rooms, fourth butt, south heading, and there accumulated in such quantities, that when ignited it caused this calamity; but the great mystery is, did the mine generate explosive gas prior to the explosion? That question was not proven in the affirmative at the coroner's investigation by any one. The management and all the witnesses testified that there was never any gas known to be in the mine prior to the explosion, the mine was worked and traveled at all times, and in all places with naked lights, which was done in the afternoon before the explosion, in the various rooms where the gas was certainly generated, and a naked lamp is most undoubtedly a good lamp to find the gas with if any is accumulating. It is a known fact, when Duffy worked in No. 2 room, and at the time he left it (a few days previous to the explosion) no explosive gas was noticed, and that there was a weight, or rather a squeeze, on those idle rooms cannot be denied, and the atmospheric pressure being greatly diminished from the morning of the 19th until late at night.

The atmospheric pressure at Pittsburgh mine was, at 7, A. M., 29.988 inches; at 11, A. M., 29.940 inches; at 3, P. M., 29.744 inches; at 7, P. M., 29.610 inches; at 11, P. M., 29.424 inches, the 19th of February.

The dangerous effect that a falling barometer, or a lower atmospheric pressure, has on a mine is so well known by intelligent practical miners that it would be superfluous to further explain here, and in practice it has

been well and sufficiently proven, that in some of the mines in the Connellsville coke region, in my district, not more than three or four miles distant from this mine, great quantities of gas have been known to accumulate in a few hours from the overlying strata, and where there were no falls from pillar work, and it may have been the case, in the West Leisenring mine, under the circumstances pointed out, that the gas was all generated during the night, since the air-current, as can be seen by the plan, had little or no effect in those rooms. When we consider that there was no door on the butt heading, the only air that could have got into the rooms was when the cars were on that part of the heading and butting against the air, but under no circumstances enough to sweep those rooms. The cross-sectional area of heading being 64 feet, the mine was well enough ventilated to clear it of all its noxious gases if properly directed. The ventilation at that time had was by exhaust steam; the hoisting-shaft was the in-take of air, (and the shaft having a partition,) the other side containing the steam line for running the pumps was the out-cast, and 102 feet above ground, with a cross-sectional area of 65 feet, from 22,000 feet to 28,000 feet of air was generated per minute, and from 12,000 to 14,000 and 17,000 feet of air per minute was passed through the heading where the explosion took place.

The coroner's inquest was held the following Saturday; not a single practical person was on the jury; the coroner's investigation appeared more to be a trial than anything else, since R. H. Lindsey, Esq., conducted the examination on behalf of the coroner, and S. L. Mestresat, Esq., appeared for the defense of the company; a stenographer was present, who noted the evidence. And I have made all efforts to have the entire investigation inserted in this report, and I am sorry to say that I failed in the effort of getting financial assistance from the State Department, in paying the shorthand writer for a copy of his notes. I was informed by the Department that under our ventilation law no money could be allowed for such a purpose.

The most important part of the testimony showed that the mine was examined on Monday mornings, and every morning when the mine had not been worked during the night before, but no morning examinations were made after Monday morning when the night-shifts had been working, and, consequently, on the morning of the fatal day, no examination for gas was made, and some of the men in giving their testimony showed, beyond a doubt, that they had no knowledge whatever of explosive gas. By the lawyers, for and against, a great deal of evidence was brought out that had no bearing on the case, and during the heated investigation, a feeling seemed to have arisen which, could plainly be noticed, had effected some of the jurors, so much so that when I gave evidence one of them, in a passion, insulted me; I begged to get leave to explain where he was wrong but it was not granted, and, finally, I was choked off, and was not allowed to further explain matters from my standpoint in regard to my official duties. The jury, after consulting together for about three hours, rendered the following verdict, (which was openly claimed by the press was in the shape of a compromise:)

COMMONWEALTH OF PENNSYLVANIA, }
Fayette county, } *ss:*

An inquisition indented and taken at West Leisenring, in the county of Fayette, the 20th day of February, in the year of our Lord one thousand eight hundred and eighty-four, before me, John A. Batton, coroner of the county aforesaid, upon the view of the bodies of John Buckley, Michael Heffen, and others then and there lying dead, upon the oaths of J. D. Sturgeon, L. S. Gaddis, Isaac Hurst, J. K. Ewing, junior, G. M. Baily, W. H. Cooke, good and lawful men of the county aforesaid, who, being duly sworn and affirmed to inquire on the part of the Commonwealth, when, where, how, and after what manner the said John Buckley and others came to their deaths, do say upon their respective oaths that the said John Buckley and others came to their deaths on Wednesday, February 20, 1884, at or about 6.30, A. M., in the coal mines at West Leisenring from an explosion of fire-damp, which explosion was due to the negligence of the Connellsville Coke and Iron Company through their mine-boss, Thomas Jenkins, who had not examined the mine every morning as required by law, and that Augustus Stinner, mine inspector of this district, has been negligent of his duties, in that he had never been in this mine prior to the explosion.

In witness whereof, the aforesaid coroner, as well as the jurors aforesaid, have to this inquisition set their hands and seals on the day, and the year, and at the place first above mentioned.

JOHN A. BATTON, *Coroner*, [SEAL.]
J. D. STURGEON, [SEAL.]
L. S. GADDIS, [SEAL.]
ISAAC HURST, [SEAL.]
J. K. EWING, JR., [SEAL.]
G. M. BAILY, [SEAL.]
W. H. COOKE, [SEAL.]

Had this jury granted me a full explanation regarding the mine, and the official duties that I have to perform, by an opinion of the Attorney General, it would have been impossible for them to have made use of my name in the verdict, no matter how spiteful some of them may have felt against me, for doing my duty, in making every effort to find out if the company had violated the law, namely: "*Did the mine generate explosive gas prior to the explosion?*"

As will be seen in my last year's report that I commenced my actual duties of the office on September 6, 1883, where it is also stated that a great deal of my time is spent in measuring, calculating, and branding cars, a most enormous labor for one person to perform, and this duty had occupied much of my time last winter. During last fall (1883) a difference of opinion as to how to perform that duty arose among the bituminous mine inspectors, and, among other matters, the Attorney General was, on December 3, 1883, requested to give us his advice on the following questions:

First. Can any person else, besides the mine inspector, brand cars?

Second. When the mine inspector is notified by the operator to brand unbranded cars, must the inspector do so?

A few days after the opinion, per Deputy Attorney General Robert Snodgrass, was received as follows:

First. I do not think that under the second section of the act of June 1, 1883, any person has a right to brand cars except the mine inspector; it is a part of his official duty, for the discharge of which he is responsible, under a penalty, and it can no more be delegated than other duties which he is required to perform.

Second. When the mine inspector has been regularly notified under the act, it is unquestionably his duty to see that the provisions of the act are carried out, and as this includes the branding of cars, he must discharge that duty as well as others required of him.

And in the face of those facts, one of the jurors (who, by the way, was generally known to be the correspondent of some influential paper in Pittsburgh,) poisonously abused me for doing my duty in branding the cars, as directed by the Attorney General's decision. I had been twice at the West Leisenring mine about the middle of December; the place is so situated that I had either to drive or walk to it, a distance of eight miles from my office. I had been notified to brand the cars; on my first day coming to the place the mine was not in operation, and I went to my office again in the afternoon; on the next day went again, and, with the assistance of mining-boss Thomas Jenkins, branded all the cars that were found to be uniform in capacity; some six cars remained unbranded since they were found not to be of the same capacity, (and up to the present date remain unbranded.) It was then and there understood by the mining-boss and the superintendent of the mine that in a week or so those cars be made uniform with the others, and I to be notified; so I calculated, when called upon again, to do this small amount of work, and then give the mine a visit inside, since it was late in the afternoon when I had finished branding the cars, and the miners were most all out of the mine; however, I must frankly state, from the conversation had with the mining-boss during the day about the mine, (while assisting me,) and the system the mine was ventilated and worked upon, and being informed by him that there never was a sign of explosive gas seen, or any indication of it, and as a precautionary measure the mine was examined every morning before the miners went down, coupled with the noticeable fact, the solid and substantial appearance of the mine outside, the flow of air the outcast presented, I came to the conclusion, under the circumstances, it being a new mine, that my time in visiting the mines would be spent best, and be of the greatest value, to visit those mines first, which I expected to find in a bad condition.

ACCIDENT No. 9 was Richard J. Finnell, a miner, 27 years old and married; at the Youngstown mines, on March the 13th, by a fall of roof coal, while preparing in a flat heading, by mining for a broader space, to lay a parting in, (a so-called lay-off.) The loss of his life was mainly due to his

own carelessness, depending, no doubt, on good luck, since it was known to him that the very roof coal that ended his life so instantly was not secure, and there were plenty of posts at the place where he was working, so that he could have made himself safe.

[Copy.]

COMMONWEALTH OF PENNSYLVANIA, } ss:
Fayette county, }

An inquisition indented and taken at Youngstown in the county of Fayette, the 13th day of March, in the year of our Lord one thousand eight hundred and eighty-four, before me, John A. Batton, coroner of the county aforesaid, upon the view of the body of Richard J. Finnell, then and there lying dead, upon the oaths of Benjamin Williams, A. H. Wycoff, F. M. Stowe, John Pegg, Albert Taylor, and Edward Trimmer, good and lawful men of the county aforesaid, who, being duly sworn and affirmed to inquire on the part of the Commonwealth, when, where, how, and after what manner the said Richard J. Finnell came to his death, do say upon their respective oaths that the said Richard J. Finnell came to his death at Youngstown, Fayette county, on the 13th day of March, 1884, from a fall of coal, which fall was due to negligence on the part of the said Richard J. Finnell, in that he did not post the roof as he should have done.

In witness whereof the aforesaid coroner, as well as the jurors aforesaid, have to this inquisition set their hands and seals on the day and the year and at the place first above mentioned.

[SEAL.] JOHN A. BATTON, *Coroner.*

ACCIDENT No. 10.—Jacob West, a miner, twenty-two years old, and married, at the Tremont mines, on the Monongahela river, was killed by a fall of slate, April 12. Being an inexperienced miner, it was a mere accident. He was told, by a boy working with him, the dangerous condition the slate was in, but it is supposed that Mr. West did not understand the danger, hence the fatal result.

ACCIDENT No. 13.—William D. Jones, a driver, twenty-two years of age, and married, was killed on May 28, at the Trotter shaft. While the cars were in motion, he uncoupled them, near the bottom of the shaft. He had placed his head between the cars, when, pulling the hitchen out, the front car struck, and the rear cars being still under headway, caught his head, injuring him so badly that he died in a few hours afterward.

ACCIDENT No. 17.—Jacob Sacks, a miner, twenty-four years old, and married, at Leith shaft, July 9, was instantly killed by a fall of roof coal in the heading. The driver had called on him to assist in clearing the heading-road, on which roof coal had fallen, the driver in the meantime going into a room for a pick with which to sound the roof, and pull down all loose stuff. However, Mr. Sacks did not await the driver's return, but went to work to clear the track as soon as possible, when another fall occurred, with the above result. It was rather reckless in going under a fall without sounding it.

ACCIDENT No. 19.—Peter Riley, a miner, thirty-five years of age, and

married, was killed by a fall of slate, at the Excelsior mines, on the Monongahela river, October 22. Mr. Riley and his partner were driving an air course. On my investigation of the case, from all the surroundings that I saw in the unfortunate working-place and the information received from others, I came to the conclusion that the death of Mr. Riley was unavoidable, he having been an experienced and excellent miner.

ACCIDENT No. 20 was the fatal mine explosion at the Youngstown mines, within five miles of Uniontown, on the South-West railroad, October 27, at about 4 o'clock, P. M., where fourteen persons lost their lives. Ten of them being married men, leaving twenty-eight orphan children; the rest single; the three young boys (Nicklow, Price, and Miller) almost died alongside of their fathers. I was in Uniontown at the time, and arrived at the mine about 5, P. M., and found everything in confusion; nearly all the men, including the management, had gone to the opening of the line air course on the left-hand side of the slope. At first, I was under the impression that but few men could have been injured, from the fact of its being so late in the afternoon very few, if any, would be inside; however, I was soon informed that a night shift went on about 3, P. M. When learning this, I sent hasty messengers for some of the management, to learn where the men were working in the mine, at the same time, I gave orders to get out the Claney safety lamps, to oil and clean them, and started myself to the store, near by, and got muslin, nails, and hatchet, for I knew that temporary stoppings would have to be put up. Soon after, I learned that either ten or twelve persons of the night shift had been working on the right-hand side of the slope. Many of the men were afraid to go down into the mine, for the slope was at this time exhausting immense quantities of after-gas, but, after I assured the men that I would take the lead and guide them, some six or seven men followed me—the only names that I can remember are Richard Bosley and George Hanlin. We went by the way of the boundary-line air course, on the right-hand side of the slope, as indicated by the map or plan, and we soon found some of the wooden stoppings destroyed, and getting worse the further down we went, (the dip of the mine being, on an average, about 10 feet to the 100;) we repaired the damage done as hastily as possible by closing the apertures with muslin. The first person found dead was Frank Nicklow, at the mouth of his room —as will be seen by the plan of the mine, he had worked in the last room of No. 3 butt, sixth flat; his son, William, was found dead in the same heading, lying on the side of the road, about forty feet from his father, with his head towards No. 6 flat heading. Albert Taylor and George Cunningham had worked in the parallel to No. 7 flat, and both of them lost their lives. Mr. Cunningham was found on No. 7 flat, between No. 2 and No. 3 butt heading. Mr. Taylor was found between No. 7 and No. 6 flat, on the third butt heading, but a small distance from No. 6 flat. Jerry Ringer and Thomas Cole had worked in No. 7 flat heading. Mr. Cole was found on No. 7 flat, near the No. 2 butt heading. Jerry Ringer was found, still living, on No. 7 flat, near the No. 1 butt heading; he was taken out,

and, with good attendance, has recovered—his escape was undoubtedly a miracle; he was the only one saved on this side of the mine. William Minard, who had been the driver for the night shift on this side. was found on No. 7 flat, between No. 1 and No. 2 butt heading. James Price, and his son James, who had worked in No. 1 butt heading, of the seventh flat, in No. 2 room, on the right hand of said butt heading, were both found in a room (opposite their room) on the other side of the heading. Jesse Miller, and his son Jesse, who also worked in the same butt heading, on the left side (room No. 4) of the heading, were found in their room, about thirty feet from the heading. Sol Vansickle had worked in room No. 7, on the left side of the butt heading, and was found in his room, about forty-five feet from the heading. Joseph Zebley, the pumper, was found a little distance below the pumps, on the slope, between sixth and seventh right-hand flat headings. A. M. Wilson, track layer, was found in first butt heading, near parallel air course of the seventh flat heading on the left side of the slope. A. J. Lape, the rope rider, was found dead midway of manway, between fifth and sixth flat headings, on left side of the slope. Injured men were on the left-hand side of slope, at the lay of about fifty feet from slope on the seventh flat, and were more or less burned—Channy Wilson, hauler, James Darby, hauler, and David Cole, track layer. Jacob Cole and Wash. Keffer had been working on butt heading of the eighth flat, on left side of the slope, had heard the explosion, and started for the manway, but had been overcome with the after-gas. Keffer, after being carried a short distance, came to himself and walked out. Mr. Cole soon recovered, but was helpless, and was carried out. They were found on the manway, about half way between No. 7 and No. 8 flats.

Myself, and Charles Conners, and others, after having explored the mine to some extent, took out the last dead man, Thomas Cole, at 11.20, P. M. Many miners from the near neighborhood had come, and, in the meantime, given valuable assistance in both searching for the unfortunate miners and helping to carry the dead bodies out of the mine.

On October the 28th, at 10, A. M., I went into the mine again and made a thorough examination as to the cause of the explosion, and took with me James Cole, the mining-boss of the Youngstown mine, Daniel Ramage, the fire-boss, George Hanlin, miner, James F. Beattel, superintendent for Cambria Iron Company, D. Boyd, mining engineer, Charles Conners, a former mining-boss, Richard Cole, miner, John Hardy, miner, Allen Champ, former fire-boss of this mine, Mark Watson, fire-boss, Thomas Shearer, a fire-boss, William Ryan, David Davis, and John Thomas, and went into the mine by way of line air-course on the right-hand side of slope. We found the inlet of air in this air-course to be eighteen thousand feet per minute, and, as will be seen by the plans, ventilates that portion of the mine where the explosion occurred. On examining No. 6 flat headings and the air-course, or parallel thereto, we found, (as near as the distance could be ascertained,) the gas accumulated in each heading for the length of sixty yards, the headings having an area, on the average, of fifty-six feet. I then inquired

of the fire-boss, in presence of some of the men with me, when he was in those headings last examining for gas, and I got the astonishing answer from him: "I never went in there to look for gas. I was not told to examine No. 6 flat heading and its air-course. I was told and shown by the mining-boss to examine places only where miners were working, and since nobody has been working in No. 6 flat heading and the air-course, I never went into those places."

At the same time it became known that the door on No. 3 butt heading, between No. 6 flat heading and air-course, had not been attended to. For the convenience of the driver, the door was left standing open. Only one room in No. 3 butt heading had been working, that of Frank Nicklow and his son, who had worked with Claney safety-lamps. The surroundings indicated very plainly, with the gas found there again, that the destruction had come from those neglected headings; while it is not known how long the door had stood open, and the amount of gas accumulated, but no doubt a large volume of gas had gathered, and after the door was closed on No. 3 heading, (in all likelihood shut by the driver Minard after coming down from Nicklow's place,) the current of air, as seen in the plan, swept the gas out of those headings, and spread it in all directions, since every person worked in the mine with naked light, except Nicklow and his son; the hauler also used a safety-lamp when going up to Nicklow's place, but when hauling on the No. 7 flat and the No. 1 butt heading therein, he, also, used a naked light. It would seem natural that Minard, the driver, set the gas on fire somewhere on No. 7 flat, but it may also have been ignited at or near the slope, since some of them were killed and injured by burning even on the other side of the slope. While the explosion had been very violent on its road through No. 6 flat heading, there is no doubt but that the ten miners on the right hand side of the slope, and Minard, the hauler, lost their lives by the poisonous after-gas by being suffocated. It was a known fact to the management that this No. 6 flat heading and the air-course generated gas, and at times great quantities of it. I was in the mine, and at this very particular place, on the 20th of August, when I found defective ventilation in No. 6 flat and air-course. In about four hours seven thousand feet of gas had accumulated. At that time, however, the company possessed a good fire-boss, who had been suspended on the 3d of September last, and Daniel Ramage had been hired in his place. On the above 20th of August I gave the mining boss, James Cole, strict orders in regard to those gaseous headings, so he would secure the safety of the men, and have the said door carefully attended to, and I told both him and the superintendent, Reis, how to proceed to make the air-current effective. On the 27th of August I called again, and was told by the fire-boss, Mr. Champ, and the entire management that the air in the boundary-line air-course was all that was desired, and sufficient to clean out any and all noxious gases that might be generating.

From the explanation I have made, I think all practical men, with the aid of the plans of the mine, will see at a glance how recklessly the disaster

was brought about, viz: "the accumulation of the gas by leaving open the door, and shutting the door, sweeping it out into the mine where it ignited, causing death to the innocent workmen, and sorrow, weeping, and mourning to their wives and children." The coroner's investigation was held in Uniontown, on October the 30th; all the evidence given by the experts, who went into the mine with me on October the 28th, unanimously agreed in the theory that the explosion was brought about in the manner as I have herein described.

The first witness sworn was Daniel Ramage. He said he had been about six years in the mining business; two years of that time had been spent in mining coal, and the balance of the time in iron and fire-clay; had worked at Mt. Braddock, Percy mines, and then at his present place, Youngstown mines; said his duty there was night pumper, and, in addition to this, was to examine that part of the mine that the men worked in every morning; had been employed by this company since the latter part of May, and commenced to act in the capacity of fire-boss about the 8th of September; had no experience with fire-damp only with an open light, but could tell gas when he got to it by the drawing up of the flame in the safety-lamp; Jacob Cole, the pit boss, went with me a couple of mornings and showed me gas in the Davy lamps once, in air-course and heading; showed me nine places to go into, then three more at another time, and three on the other side of heading, or about twelve places in all; never found any gas; he examined where Hanlin, Frank Nicklow, and his son worked on morning of the day the explosion occurred; also, No. 3 butt heading and No. 6 right; didn't examine the air-course, only where men were working; the trap-door was placed between parallel and air-course; had no instructions in regard to trap-doors; had no instructions to go in at any other places but those that were working; he didn't think it his duty to examine any more than Cole told him to examine; didn't know where the explosion occurred; never found gas where men were working; the trap-door would close if partly opened, but if opened more than half way, would not close; didn't have a regular fire-boss after Champ left, and didn't pretend to be an expert; said that men of the first shift went in at four o'clock in the morning, and came out, generally, from two to three o'clock in the afternoon; that the second shift of men then went in and did not come out before ten or twelve o'clock at night; he made his examination for gas at half past two in the mornings, and it took him about an hour to make the round; he didn't know whether the trap-door was closed that morning or not; said he didn't know all the duties of a fire-boss; then he pointed out to the jury where part of the men were found, whichwere Mr. Nicklow and his son, and he explained a draught of the mine to the jury; said he never saw any gas while working at Frost's Station, but had seen it at Mt. Braddock with a naked light; never used a Davy lamp until he came to the Youngstown mine; then used it to make his examinations with, and a Claney lamp for light; Cole showed him the gas only one time, and didn't give him instructions about the

lamp and gas, but he burned lamp on its side; Cole tended to the lamp when Ramage was not using it.

James Cole was then sworn. Said he had charge of the Youngstown mines for six months; had been there altogether eighteen months; had been mining nearly fifteen years; had never been fire-boss before; didn't know exactly how long he had been fire-boss here, but must have been nearly a year. Said he had worked at different mines; was not the regular fire-boss, but went in after the regular fire-boss and examined part of the old workings. Said it was no use of trying for gas with a safety-lamp where the men used an open light. He said he had examined the air in slope by anemometer, and found it 650; then down in air-course found 46,000 cubic feet of air coming out at three o'clock, which was only an hour and a half before the explosion. After explosion, came past two first men that were killed; brattices, boards, and doors were blown down. It was not customary to leave a door open, but had to be open when the driver went through. Had no "trapper" there, because he was afraid the boy would leave the door open. Said that Nicklow and his boy used safety-lamps, and that there was a good current of air in No. 6 flat and in No. 7. He here showed to the jury where the bodies of the men killed were found; showed that Zebley was found at the mouth of the sixth right, eight or nine feet below the pump. Thought the gas ignited above the sixth right, and his theory was that there was plenty of room in the old workings for the gas to accumulate, which it had done, and then, by a large fall of the roof, had been forced by the concussion down as far as Sol. Vansickle's room, where it had likely been ignited by an open light. Said the hauler had a safety-lamp with him, but only used it part of the time. He didn't know, but suspected that gas existed in the old headings; was down there nearly every day, but didn't go to examine them. All the miners that were in the afternoon of the explosion came in about three o'clock; the rope-rider, roadman, and the pumper, Zebley, had been in all day. He knew there was gas in the air-course, but knew it was harmless. Men never worked in the end of the parallel flat. The men used safety-lamps, and so did the haulers all the time. He never discovered gas on that heading. The greatest current of air went through the sixth flat on to the slope. There was a trip coming down the slope at the time of explosion, and a trip coming down would nearly stop the flow of air altogether for a short time. He didn't consider Ramage a perfectly competent man, but thought he was able to attend to the bnsiness given him to do, as he was careful, cautious, &c. Cole didn't claim to be an expert; didn't know the mixture of gases. Said the mining law called for a fire-boss to examine workings only. Had been through the workings as much as three or four times a day, and at least once a week, as the law requires. Once, about three months ago, he discovered gas on the sixth right. Was in the mines on Tuesday and Wednesday after the explosion. Saw no gas or any indications of gas. He partly examined the old workings the day before the explosion, but found no gas as far as he went.

And the jury rendered the following verdict:

UNIONTOWN, PA., *November 26, 1884.*

AUGUSTUS STINNER, Esq.

DEAR SIR: The coroner's jury in the case of the accident at Youngstown rendered the following verdict:

That the said Solomon Vansickle, Jacob Zebley, and others came to their deaths on Monday, the 27th of October, A. D. 1884, in the mines of the Youngstown Coke Company, situated in North Union township, Fayette county, Pennsylvania, by an explosion of fire-damp, and from the effects of after-damp in said mines.

We further find that the said company was remiss in not providing a trapper or trappers to properly direct the air-current, and, also, in not having a competent person to examine the mines prior to the explosion.

JOHN N. BATTON, *Coroner.*
JOHN W. DARBY,
R. A. MCLEAN,
ISAAC HURAT,
A. H. WYCOFF,
A. W. BOWMAN,
O. P. MARKLE, *Jurors.*

HOW THE MINES CAN BE WORKED TO SECURE GREATER SAFETY

Should be well considered and understood by all those that are interested in mines and mining; mainly in those mines which are operated in the Connellsville coke region by either shaft or slope; they are, in my opinion, all more or less dangerous, and the system of ventilating and mode of working should be improved as soon as possible; no time should be lost in doing so. This so-called mode of working "from hand to mouth" should be made, at once, a thing of the past; it has proven itself very dangerous in gaseous mines. A system of ventilating and working of those mines should be adopted so that in case there was an explosion of gas the miner would have some chance of escape, and not be caught in a trap, as was the case in the West Leisenring and Youngstown explosion. While it is true that the West Leisenring shaft mine is one of the best in my district, the mode adopted, neverthelesss, in room-working is not a safe one in case of fire or explosion. Had the true system of room-working been adopted, which is to commence at the end of the heading, and not at the front of the butt-heading near the main headings, the nineteen (19) persons who lost their lives in this mine on the 20th of last February, by the explosion, fourteen of them, at least, would have been saved, and in all cases where the intake of air is parallel to the outtake the headings should be driven near to the boundary line, and the first butt-headings started from hence and be driven to the end of the section, and the room work be commenced as I stated before.

Let us take the Youngtown slope mine, one of the best in that section of the country. As will be seen by the plan, at the time of the explosion

it was nothing more or less under the condition (the air-course having been gutted) than a mere trap. The men were cut off entirely from any intake of air, and by the time the apertures in the air-course were temporarily restored, and fresh air brought down into the mine, the men were suffocated. In slope mines of this kind, to insure greater safety, a shaft should be sunk near the boundary line, and from thence connection should be made with the bottom of the slope, a force fan ventilator erected at the shaft, and a good heading and room system adopted, and this mine, and all others of its kind in this section, would be ninety per cent. safer in case of an explosion. I am safe in claiming, had such a shaft, with a force fan ventilator, been in existence in the Youngstown mines at the time of the explosion, with the force occurring, nine more men would have been saved.

If there is an honest desire to work the mines with more safety and security, then, under no circumstances whatever, should any person be placed in charge of any mine, or responsible position where life is at stake, who has not a thorough and practical knowledge of mines and mining. It is certainly an absurdity to place persons in responsible positions in mines who have had only a few years', or a few months', experience.

Mr. Charles Connors, while a former mining boss, introduced a new system (in this region) of room work, and the mode of drawing pillars, and having requested him, some time ago, to furnish me the system of working for the yearly report, he sends the following plan and explanation:

AUGUSTUS STINNER, Esquire,

Inspector of Mines, Connellsville, Pa.:

DEAR SIR: In compliance with your request, I herewith send you a description of the mode of working and mining coal, which I had adopted, and put partly into practice, at the Leith shaft, belonging to the Chicago and Connellsville Coke Company.

I may say, however, that I did not continue in the employment of that company long enough, after having started the new system, to see it carried out fully; therefore, I cannot give you all of the *data* that will, perhaps, be necessary to a full and fair comprehension between this method and the one in operation previous to my taking charge of the mines. However, in so far as the experiment went, I will now give you the details.

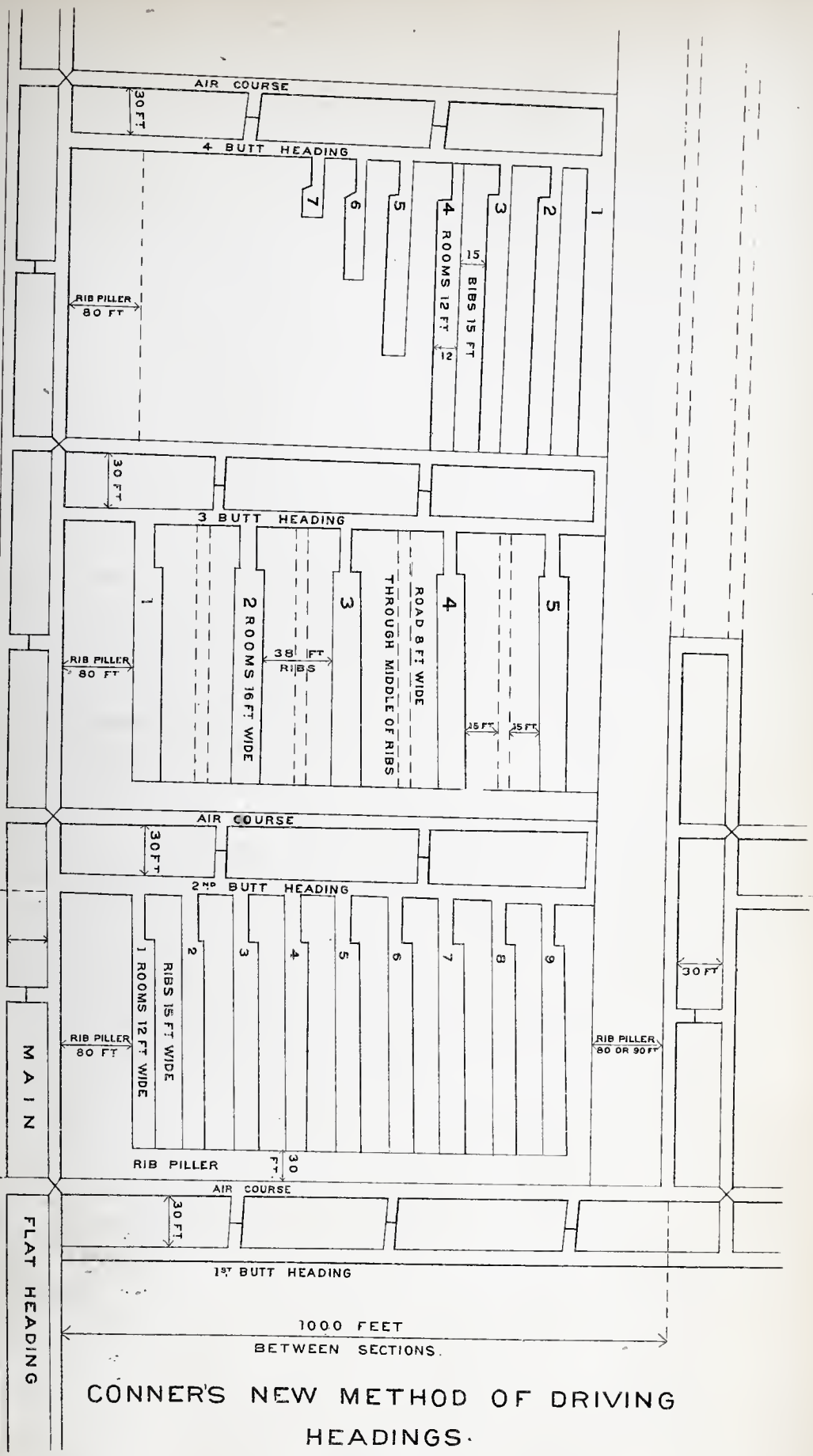
The accompanying sketch will, perhaps, be useful in getting at the true idea of the two methods. It is not drawn to any scale, but is only a rough draft, to give you a clearer idea of the two methods. You will see that the workings are laid off in sections of 1,000×300 feet.

First section, No. 2 heading, represents the method in use previous to my having charge.

First section, No. 3 heading, represents new method in operation.

First section, No. 4 heading, represents a method which the writer believes to be superior to either of the two preceding ones.

In working out by the first method, the rooms are turned off every 27 feet, from center to center, and are driven in 8 feet wide for 30 feet, when



CONNER'S NEW METHOD OF DRIVING HEADINGS.

they are widened out to 12 feet, and driven 250 feet to within 20 feet of air-course of No. 1 butt heading. These rooms are worked as the heading progresses, commencing at a point 80 feet from main flat headings, and are turned off and worked out from the lower end of the heading. No ribs are drawn until the last room on the heading is worked out, when the ribs are commenced to be drawn from the innermost room, and brought back, leaving the gob behind. Now, in this mine the bottom, or floor, is very soft, there being an underclay about 2 feet thick, which, when wet, is simply mud, giving no foundation for posts, you will perceive that with ribs of small size under these conditions, and with about 500 or 600 feet of superincumbent strata that there was everything favorable to a creep or squeeze, which happened as soon as there was a sufficient number of ribs taken out. When it was found impracticable to work the ribs under those conditions I got permission from the company to try other methods, and suggested to them the mode, as shown in first section, fourth heading, that is, to drive the headings to their boundary rib and work out the rooms from the inner end; and just as soon as a room was finished to commence to draw the rib back, thus leaving the gob behind, and having all solid coal below as the ribs were being worked, thus making it impossible to have a squeeze or creep; but, owing to the fact of there not being pit room enough to get rooms to supply the coal for the ovens, I had to adopt a mode somewhat of a hybrid between those two methods, viz: The method as shown in first section No. 3 butt heading.

You will see from diagram that the difference between methods on No. 2 heading and No. 3 is that only each alternate room is worked as the heading proceeds, and that the rooms are driven 16 feet wide instead of 12 feet, and the ribs are consequently 38 feet thick instead of 15 feet. In recovering the ribs' work is commenced at the inside rib, which is split by a place being driven through the middle of it 8 feet wide to the air-course of No. 2 heading, (as shown by dotted lines on diagram,) thus leaving 15 feet of coal on each side to be brought back through this last road. Now, as there will only be about three or four roads working at one time there will not be any danger of a creep, from the fact that there will be a large number of 38 feet ribs to break off short any of the overlying strata that may, from the force of gravity, have a tendency to fall where the coal has been removed from under it.

The advantages claimed by this method over the other is:

1. That a greater percentage of the coal seam can be recovered.
2. That it gives better security to life and property.
3. That it is more economical, both as regards labor and expense. Now let me give some proof of these assumptions. First, as to the recovery of more coal. It is evident that where there is a large amount of overlying strata, it requires stronger supports to keep it in position; and that where the supports or ribs are just of sufficient size and strength to successfully recover coal, with one hundred feet of cover on it, the ribs or supports must be increased in proportion where there is from six hundred to seven hun-

dred feet or upwards of overlying strata, if we would expect to prevent the crushing and squeezing which the extra weight of the increased thickness of strata will necessarily entail; and allow me right here to remark that just in this particular is where the majority of the persons who have laid out the mines in this district have made their greatest mistakes, as the large number of mines in this region which have been overrun with creeps and squeezes only too well corroborate. You know full well that in all of this coke region (almost without exception) the mines are all of the same uniform pattern as regards the size of ribs, viz: twelve to fifteen feet, whether they have fifty or five hundred feet of surface on them, and the natural result, consequently, overtakes them—large quantities of valuable coal are lost that, with proper management, could have been all recovered. But this is a digression—now, in working ribs of insufficient size and strength whenever an area of coal has been excavated, the roof being thus left unsupported, will naturally seek to fall down from the law of gravity, and, consequently, it presses downwards on to the ribs, and commences to crush and crumble the coal of which they are composed, and not having enough bearing surface to cut or break the roof off short by their edge, the whole rib is crushed into small coal or (if the floor of the mine is soft) presses the whole rib bodily into the bottom or floor, and causes the floor of the rooms to heave up, until the roof and floor meet, or becomes so low that men cannot get in to work the coal, thus one rib or so is lost, and work is commenced further out, and some more ribs are removed, and a new area is now excavated, and more roof wants to fall, but cannot from the fact that the ribs lost previously act as a sort of bridge to prevent the roof from being broken, and thus it swings on the ribs below the newly-excavated area, and the previous operation is repeated over and over again until the mine is overrun in many cases, and probably not more than one half the coal recovered. Now I claim that by the new method under consideration, the above results are unlikely to happen, because a rib or support is left large enough to have sufficient bearing surface to withstand the superincumbent pressure, so that the roof will break off short along the edge of the rib as it were, and allow it to fall, and thus to remove some of the pressure from the ribs yet to be worked, and as these other ribs are being removed the same operation is repeated, and, hence, all, or nearly all, of the coal can be recovered.

As to the second claim that it is safer to life and property, please turn to the diagram, and you will observe that, by the old methods, the ribs can only be recovered through the 12-foot rooms, (which have been already worked out,) and which will have stood for some time with their roof exposed to the destroying influence of the atmosphere, and the post will have decomposed and numerous falls have taken place, thus leaving ragged edges of falls and insecure props, through which men and mules have to travel, and under which the diggers have to dig and load their coal, whereas, by the new method, the ribs are recovered through the 8-foot places driven through the middle of the 38-foot rib; thus having a newly-exposed surface of roof of only 8 feet instead of 12 feet of long exposed

surface, through which men and mules travel, and under which the diggers dig and load their coal. There is also less risk of small detached pieces of roof falling upon the men engaged at work, from the fact that as each successive rib is removed the roof generally falls down, and there is not the same danger of the overhanging strata to swing over on to the road and working places, and thus keep crushing and crumbling the roof and sides where people have to travel. It is also safer from the accumulation of large quantities of gas, from the fact of being better able to keep open the air-way as compared with a method where a squeeze closes up the airways, and thus makes it impossible to have air in sufficient volume to dilute the gases that are given off from the strata.

With reference to the question of economy, the following comparison of the actual cost of the two methods, (in so far as I had opportunity to develop the new method,) will be the best and most satisfactory answer I can give to the question:

Old Method.

To 540 feet of wood rail @ 2 cents per foot,	$10 80
To 40 posts @ 10 cents each,	4 00
To laying parting switch,	2 00
To cleaning up room preparatory to recovering ribs, average cost of each room,	10 00
To renewing posts in old rooms, cost by labor,	4 00
To 40 new posts,	4 00
To relaying room road,	4 00
	$38 80

New Method.

To 540 feet of wood rail @ 2 cents per foot,	$10 80
To 16 posts @ 10 cents each,	1 60
To laying parting switch,	2 00
To 100 wagons of coal dug out of cut-through holes, 10 cents extra per wagon,	10 00
To laying curve in cut-through,	1 00
	$24 40

Now, it may be claimed that as the rooms in the new method are 16 feet wide while in the old they are 12 feet, that by the new method one quarter more coal is mined for the same expense for track, &c., that there ought to be one quarter of the above expenses deducted from the account of the new method, which would leave the result as follows: $24 40—$6 10= $18 30, so that the balance in favor of the new method stands thus:

Old method,	$38 80
New method,	18 30
	$20 50

From the above figures you will, therefore, see that were we to leave all other advantages to one side, that there is an actual saving by the new method over the old of $20 50 per room. I think it is needless for me to give further proof on this head, as the figures speak plain and to the point.

Let me say in explanation of the items of posts, in the new method, that we only need sixteen posts per room for the following reasons: In working up these rooms sixteen feet wide, there is a double row of posts set, with the road in the middle, and there are just double the number of posts used that there are in the twelve-foot rooms, viz: eighty; but to set this off, as soon as the sixteen-foot room is driven up its distance, the whole of the posts are drawn out and used in another room; whereas, in the twelve-foot rooms, they are left standing until the ribs are worked out, which is not required in the new method, for as soon as a room is finished in the new method there is no further use for it, as the ribs are recovered by splitting the rib itself, and thus the room-posts can be used over and over again in other rooms, and as the average of the posts will last to be set up about five or six times, hence the average number of posts per room will be sixteen, (thus, 80÷5=16.)

The matter having been more lengthy than I anticipated, and providing you think well of it, you may insert it in your annual report.

Very respectfully,

UNIONTOWN, *November 20, 1884.* CHARLES CONNORS.

DECISIONS AND LEGAL PROCEEDINGS.

Under the amended section seventeen, approved the 13th of June, 1883:

"If the operator, owner, or miners shall not be satisfied with any decision the inspector may arrive at, which is not in conformity with the provisions of this act, it may be lawful for such operator, owner, or miners, to apply by petition to the court of quarter sessions of the county wherein the mine is located, and said court shall thereupon appoint three practical, reputable, and competent and disinterested persons, whose duty it shall be to forthwith examine such mine, and make such report, under oath, to the court of the facts as they exist, or may have been together with their opinion thereon; and if said report sustains the decision of the inspector, then the party making application to court shall pay the cost of such proceeding; and if the report is against such decision, then the county shall pay the costs; the report of said board shall become absolute unless exceptions thereto shall be filed within ten days after notice of the filing thereof to the owner, operator, or inspector, and if exceptions are filed the court shall hear and determine the same, and the decision shall be final and conclusive."

I gave it as my decision, on the 22d of February, 1884, that in the Youngstown mine, operated by the Youngstown Coke Company, (Limited,) all pillars should be drawn with safety-lamps. The agent of the company, being of the opinion that my decision was a hardship and unnecessary, applied to court for relief, of which proceedings I received the following:

To AUGUSTUS STINNER, Esquire,

Inspector of Bituminous Coal Mines in the Fifth District:

You are hereby notified that the Youngstown Coke Company, (Limited,) whose coal mines are located at Stambaugh, Fayette county, Pa., is dissatisfied with your decision and notice of February 22, 1884, that said company shall draw no ribs, without using safety-lamps, in said mines, and that an application will be made on Monday, March 3, 1884, at 3 o'clock, P. M., to the court of quarter sessions of said county, sitting at Uniontown, to have three practical, reputable, and competent and disinterested persons appointed to examine said mines and report to said court the facts as they exist, under and in pursuance of the act of Assembly in such case made and provided.

FRED. C. KEIGHLEY,

Assistant Superintendent Youngstown Coke Company, (Limited.)

FEBRUARY 28, 1884.

I then engaged R. H. Lindsey, attorney-at-law, to attend to the case, and I received due notice from him, and at the same time from the agent of the mine, Frederick Keighley, that the three appointed examiners would be visiting the mine on March 6, with the request that I should attend the examination of the mine, to which I cheerfully acceded. The examining board made the following report:

We, the undersigned, appointed by the court of quarter sessions of Fayette county to examine the mines of the Youngstown Coke Company, (Limited,) situated in North Union township, Fayette county, Pennsylvania, upon the appeal of the said company from the decision of Augustus Stinner, inspector of mines, do respectfully make report as follows: That on the 6th of March, 1884, we made a careful personal examination of the said mine, and found that the mines were well ventilated and in good working order; that on the north side of the slope we found carbureted hydrogen gas, but failed to find any on south side of the slope. And we are of the opinion that a due regard to the safety of the miners requires that safety-lamps should be used by them whenever drawing ribs in the said mine.

ELIJAH PARKER,
C. STILLWAGON,
P. LOCKE.

The foregoing report was sworn to in the usual manner by the three examiners on March 6, 1884.

Exceptions in due form were filed by the company against the examiners' report March 15, 1884, and finally the case was disposed of by the court. And now, October 6, 1884, after consideration thereof, it is ordered and directed that said exceptions be dismissed, and the said report be confirmed, *per curiam.*

On examining Hill Farm mine of the Dunbar Furnace Company, on March 13, I was informed that a miner had been slightly burned in this

mine by gas about a year previous, and that the mine was not examined in the morning before the miners went in. Upon this information, I notified the agent of said mine, H. W. Hazard, and the mining-boss, W. F. Holsinger, under section thirteen of the act, that the law had been violated in the fourth section, and also informed them of the penalty for such violation, and in case the notice was disregarded for the space of ten days, (as allowed by section thirteen,) in not carefully examining the mine every morning with a safety-lamp by a competent person before any workman would enter. I would prosecute the case.

From information received I thought my notice was disregarded, the mine not having been examined in the morning before the miners had entered for the space of ten days. And while, in accordance with section thirteen, I took preliminary steps to institute a prosecution against the management of the mine for the violation of section four, the mining-boss, Mr. W. F. Holsinger, went before burgess W. H. Cotborn, of Dunbar, on the 5th of April, 1884, and certified, under oath, that he had examined the Hill Farm mine, and furnishing me with the said affidavit, I dropped the intended prosecution.

In the latter part of June, 1884, I gave a decision under section seventeen, as herein already quoted, in regard to persons employed in the Trotter mines, said mine knowing to generate explosive gas; however, the management, or rather the company, disregarded my decision, for what reason I am unable to say.

CONNELLSVILLE, *Fayette county, Pa., June 30, 1884.*

F. F. Keller, Superintendent, and John Sneddon, Mining-boss, for the H. C. Frick Coke Company, at Trotter mines, Fayette county, Pa.:

TAKE NOTICE.

Under the amended section seventeen, approved June 13, 1883, known as a section of the act providing the means for securing the health and safety of persons employed in the bituminous coal mines of Pennsylvania, approved the 18th day of April, 1877, "I give it as my decision that you immediately take steps to clear said Trotter mine of all such inferior persons employed in the inside workings of said mines, and under the circumstances clear the mine mainly of those persons who don't understand the language of those persons who have charge of the management of said mine."

AUGUSTUS STINNER,
Inspector Fifth Bituminous District.

The company took no notice of my decision, and did not apply, by petition, to court, in having three examiners appointed in testing my decision; so the matter ended, we not having any further jurisdiction in the case under the law.

TABLE I.—SHOWING LOCATION OF COLLIERIES IN THE FIFTH BITUMINOUS MINE DISTRICT.

Name of Colliery.	Name of Company.	Location—County.	Name of Superintendent.	Post-Office Address.
Anchor,	Laing & Davison,	Fayette,	Mr. Laing,	Dunbar.
Alps,	Alps Coal Company,	do.	John Underwood,	California, Washington county.
Bliss & Marshall,	Bliss & Marshall,	do.	J. W. Stirling,	Fairchance.
Bargeddle,	James Harris & Co.,	do.	James Harris,	Roscoe, Washington county.
*Berlin,		Somerset,		
*Buffalo Creek,		do.		
Brown's,	Sweet & Brown,	Bedford,	W. H. Sweet,	Saxton.
Clinton,	B. F. Keister & Co.,	Fayette,	B. F. Keister,	Owensdale.
Coal Brook,	McClure & Rafferty,	do.	Franklin Bradford,	Moyer.
Cora,	J. M. Newmeyer & Son,	do.	J. M. Newmeyer,	Dawson.
Clarissa,	James Cochran & Son,	do.	James Cochran,	do.
Connellsville Shaft,	Pitts'gh and Connellsville Gas and Coal Co.,	do.	Charles Davidson,	Connellsville.
Carondelet,	Frazer & Frye,	do.	H. B. Frye,	Fayette City.
Cedar Hill,	Morgan & Dixon,	do.	John Dixon,	California, Washington county.
Climax,	Leonard & Co.,	do.	Ely Leonard,	Brownsville.
Casselman,	Hofman & Co.,	Somerset,		Meyersdale.
Cochran,	James Cochran,	do.	James Cochran,	Elk Lick.
*Conrad Shaft,	R. B. Wigton & Co.,	Bedford,		
Diamond,	McClure & Co.,	Fayette,	Joseph Henry,	Scottdale, Westmoreland county.
Dexter,	J. R. Staufer & Co.,	do.	Samuel R. Fairchild,	do do. do.
Dunbar Coke Works,	Colvin & Co.,	do.	James Henderson,	Dunbar.
†Deer Park,		do.		
Defiance,	A. Covalt & Co.,	Bedford,	H. Dasher,	Six Mile Run.
*Deval's,		do.		
Eagle,	H. C. Frick Coke Company,	Fayette,	Robert Ramsey,	Scottdale, Westmoreland county.
Excelsior,	A. S. Furlong & Son,	do.	A. S. Furlong,	Roscoe, Washington county.
*Enterprise,		Somerset,		
Everett Iron Company,	Everett Iron Company,	Bedford,	James S. Cunningham,	Kearney.
Furnace,	Charlotte Furnace Company,	Fayette,	Henry Swartz,	Scottdale, Westmoreland county.
Foundry,	H. C. Frick Coke Company,	do.	Robert Ramsey,	do. do. do.
Frick,	do. do.	do.	do. do.	do. do. do.
Franklin,	B. F. Keister & Co.,	do.	B. F. Keister,	Owensdale.
Fort Hill,	W. I. Rainey,	do.		122 Water street, Cleveland, Ohio.
Ferguson,	Dunbar Furnace Company,	do.	Robert Lang,	Dunbar.
Fairchance,	Fairchance Iron Company,	do.	R. L. Martin,	Fairchance.
*Frog Hill,		Somerset,		
Fairview,	Fairview Coal Company,	do.	Thomas Reese,	Meyersdale.
Grace,	W. I. Rainey,	Fayette,		122 Water street, Cleveland, Ohio.
Garrows',	Garrows & Co.,	do.	Joseph Garrow,	California, Washington county.
Henry Clay,	H. C. Frick Coke Company,	do.	Robert Ramsey,	Scottdale, Westmoreland county.
Hill Farm,	Dunbar Furnace Company,	do.	Robert Lang,	Dunbar.
Hoblitzel Mine,	Hoblitzel & Co.,	Somerset,	Lewis Morgan,	Keystone Junction.
Hocking Mines,	Hocking Coal Company,	do.	John Hocking,	Meyersdale.
Hagan & Weil,	Hagan & Weil,	Fayette,	A. Weil,	Uniontown.
Jackson,	James Cochran & Co.,	do.	James Cochran,	Dawson.
Kiffer,	W. A. Kiffer,	do.	W. A. Kiffer,	Scottdale, Westmoreland county.

TABLE I.--SHOWING LOCATION OF COLLIERIES—Continued.

NAME OF COLLIERY.	Name of Company.	Location—County.	Name of Superintendent.	Post-Office Address.
*Keystone,		Somerset,		
Leisenring, No. 1,	Connellsville Coal and Iron Company,	Fayette,	J. R. Taggart,	Leisenring.
Leisenring, No. 2,	do. do do.	do.	do. do.	do.
Lemont,	Robert Hogsett & Co.,	do.	Robert Hogsett,	Uniontown.
Lelth,	Chicago and Connellsville Coke Co., Limited,	do.	Charles McSweeney,	do.
Little Redstone,	James Rutherford,	do.	James Rutherford,	Fayette City.
Little Pittsburgh,	Schmerz & Co.,	do.	John Bevan,	do.
*Lane Mine, No. 1,		Bedford,		
Lane Mine, No. 2,		do.		
Morgan,	H. C. Frick Coke Company,	Fayette,	Robert Ramsey,	Scottdale, Westmoreland county.
Morrell,	Cambria Iron Company,	do.	James F. Beattie,	Connellsville.
†Mount Braddock,		do.		
Merchant,	David Bowtler,	do.	David Bowtler,	Coal Centre, Washington county.
*Maher,		Somerset,		
Mount Equity,	Kemble Coal and Iron Company,	Bedford,	William Kelly,	Riddiesburg.
Maher Mines,	Rody Maher,	do.	Rody Maher,	Six Mile Run.
Oliphant,	Fayette Coke and Furnace Company,	Fayette,	A. B. DeSaules,	Oliphant Furnace.
Painter,	McClure & Co.,	do.	Joseph Henry,	Scottdale, Westmoreland county.
Plumer,	Pitts'gh and Connellsville Gas and Coal Co.,	do.	Charles Davidson,	Connellsville.
†Pennsville,		do.		
Percy,	Perey Mining Company,	do.	Louis DeSaules,	Uniontown.
*Philson Iron Company,		Somerset,		
Redstone,	J. W. Moore & Co.,	Fayette,	William Dome,	Uniontown.
Summit,	H. C. Frick Coke Company,	do.	Robert Ramsey,	Scottdale, Westmoreland county.
Sterling, No. 1,	J. M. Schoomaker,	do.	Joseph Laughrey,	Dawson.
Sterling, No. 2,	do. do.	do.	do. do.	do.
Sterling, No. 3,	do. do.	do.	do. do.	do.
Spring Grove,	James Cochran & Co.,	do.	James Cochran,	do.
Stewart Furnace Company,	Stewart Iron Company, Limited,	do.	Joseph R. Thomas,	Uniontown.
Snow Hill,	Snow Hill Coal Company,	do.	Joseph Underwood,	Roscoe, Washington county.
Snowden Mines,		do.		
Shaw,	Cumberland and Elk Lick Coal Company,	Somerset,	A. Chamberlin,	Meyersdale.
Tip Top,	H. C. Frick Coke Company,	Fayette,	Robert Ramsey,	Scottdale, Westmoreland county.
Tyrone,	Laughlin & Co.,	do.	C. Wharton,	Broadford.
Trotter,	H. C. Frick Coke Company,	do.	Robert Ramsey,	Scottdale, Westmoreland county.
Tremont,	John A. Wood & Son,	do.	Samuel Graham,	Fayette City.
Turnbull's,	Joseph Turnbull & Co.,	do.	John Hall,	do.
Tub Mill Run,	Charles Morress,	Somerset,	Robert Easton,	Elk Lick.
Unlondale,	J. M. Reid,	Fayette,	Mr. Taylor,	Dunbar.
Umpire,	C. L. Snowden & Co.,	do.	W. B. McCormick,	Brownsville.
Valley,	H. C. Frick Coke Company,	do.	Robert Ramsey,	Scottdale, Westmoreland county.
White,	do. do.	do.	do. do.	do. do. do.
Wheeler,	Cambria Iron Company,	do.	James F. Beattie,	Connellsville.
Youngstown,	Youngstown Coke Company, Limited,	do.	J. M. Reis,	Uniontown.

* Mines which were in operation during the year, but did not employ eleven persons.

† Mines which have not been in operation during the year.

TABLE II.—*A statement showing Characteristics, Number of Employés, Production, &c., of the respective Collieries, in the Fifth Bituminous Mine District, for the year 1884.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Anchor,	Bituminous,						30	1	6	37	3	1		4,400
Bargeddie,	Bituminous,	Drift,					15	2	3	20	2			1,154
Brown,	Semi-bituminous,	Slope,					33	6	4	43	2	1		2,385
Carondelet,	Bituminous,	Drift,					79	5	10	94	5			6,234
Clarissa,	do.	Drift,					33		5	38	3	1		1,600
Clinton Mines,	do.	Drift,	1	1	16	1	13		2	15	2			
Cumberland and Elk Lick Coal Company,	Semi-bituminous,	Drift,					54	8	10	72	5			38,867
Cunard,	do.	Shaft,	2	1	40	2	25	3	4	32	4			1,000
Diamond,	Bituminous,	Drift,					18	3	3	24	2			
Eagle Mines,	do.	Drift,					24	15	39	3	1			30,578
Fairchance,	do.	Slope,	1	1	10	1	17	1	8	26	3	1		18,334
Fairview,	Semi-bituminous,	Drift,					40	8	9	57	4			45,520
Fayette,	Bituminous,	Slope,	2	1	50	2	36	1	21	58	4			18,565
Fort Hill,	do.	Drift,					26	2	5	33	4	1		
Foundry Mines,	do.	Drift,					24	16	14	54	4	1		42,785
Franklin Mines,	do.	Drift,					13		2	15	2			
Frick Mines,	do.	Drift,					34	2	22	58	5	2		53,563
Garrow,	do.	Drift,		1	16	1	63	12	4	79	2			4,854
Henry Clay Mines,	do.	Slope,	2	2	60	4	44	3	26	73	7	1		64,280
Hill Farm,	do.	Slope,	3	2	85	3	33	2	6	41	3	2		
Hobietzell,	Semi-bituminous,	Slope,	1	1	25	1	22	6	4	32	2	1		1,936
Hocking,	do.	Drift,					16	6	2	24	2	1		4,000
Kyle,	Bituminous,	Slope,					19	3	8	30	2	1		
Leisenring Shaft, No. 1,	do.	Shaft,	5	2	350	8	144	8	34	186	15	2		137,220
Leisenring Shaft, No. 2,	do.	Shaft,	1	2	133	4	72	3	18	93	8	1		84,112
Leith,	do.	Shaft,	4	4	30	5	103	9	26	138	15	4		15,000
Lemont Furnace,	do.	Slope,	2	1	3		23		4	27	2	1		2,692
Little Pittsburgh,	do.	Drift,					12		1	13	2			647
Morgan Mines,	do.	Drift,					54	1	29	84	6	2		87,079
Morrell,	do.	Slope,	3	1	120	4	145	12	56	203	21	3		227,688
Mt. Equity,	Semi-bituminous,	Drift,	2				70	5	10	85	19			31,212
Painter,	Bituminous,	Drift,					40	6	7	53	6	1		
Pittsburgh and Connellsville Gas, Coke, and Coal Co.,	do.	Shaft,	3	3	150	8	54	2	10	66	5			
Plumer,	do.	Drift,		1	40	2	44	2	14	60	6			

TABLE II—*Continued.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Shaft,	Bituminous,	Shaft,	3	3	150	8	42	3	10	55	4	8	. . .	111,837
Sterling,	do.	Drift,	. .	1	50	1	95	5	16	116	10	. .	. . .	10,489
Stewart Coke Works,	do.	Slope,	2	1	100	2	35	1	7	43	5	. .	. . .	73,654
Summit,	do.	Drift,	. .	. .	. .	. .	38	7	10	55	6	. .	. . .	22,509
Tip-Top,	do.	Drift,	. .	. .	. .	. .	21	4	10	35	4	1	. . .	9,299
Tremont,	do.	Drift,	. .	. .	. .	. .	60	5	13	78	6	. .	. . .	153,153
Trotter,	do.	Shaft,	3	2	120	6	101	10	27	138	10	. .	. . .	67,340
Tyrone Mines,	do.	Drift,	. .	. .	. .	. .	30	2	4	36	8	1	. . .	12,468
Umpire,	do.	Drift,	. .	. .	. .	. .	. .	85	10	12	107	6	2	67,981
Valley Mines,	do.	Drift,	1	2	. .	3	50	. .	50	100	4	2	. . .	53,199
Wheeler,	do.	Slope,	2	1	60	2	32	4	17	53	4	4	. . .	56,638
White Mines,	do.	Drift,	. .	. .	. .	. .	65	. .	76	141	5	2	. . .	64,968
Youngstown,	do.	Slope,	2	2	150	5	73	6	26	105	9	8	. . .	

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Fifth Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Number of persons employed inside.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Diamond,	Natural,	....	.....	See mo. report,	3	2	7 x 8	6 x 6
Painter,	Furnace,	...	10 feet area,	.....	4	3	7 x 7	7 x 7
Dexter,	Natural,	....	.....	8	2	2	Area, 50	Area, 50
Kiffer,	Natural,	..	.....	22	3	2	6⅛ x 7	5 x 6
Furnace,	Furnace,	....	5 x6	13	3	2	6 x 8	4 x 8
Valley,	Furnace,	...	8 x7	See mo. report,	3	6	7 x 8	6 x 6½
Tip-Top,	Natural,	....	.....	do. do.	3	6	7 x 9	6 x 8
Summit,	Furnace,	....	8 x7	do. do.	5	7	6 x 8	8 x 7
Eagle,	Furnace,	...	Vent'ed by Summit fur.,	do. do.	3	4	7 x 9	6 x 7
Foundry,	Furnace,	....	9 x7	do. do.	3	4	6 x 7	6 x 9
Morgan,	Furnace,	....	Vent'ed by Foundry fur.	do. do.	3	6	6 x 8	6 x 7
White,	Furnace,	....	7 x6	do. do.	3	7	6⅛ x 8	8 x 4
Frick,	Natural,	....	....	do. do.	3	5	6 x 7	6 x 8
Henry Clay,	Natural,	....	..... .	do. do.	3	5	6 x 8	5 x 8
Clinton,	Furnace,	...	6 x5	do. do.	3	3	7 x 8	7 x 8
Franklin,	Natural,	....	.....	do. do.	3	2	7 x 8	7 x 8
Tyrone,	Natural,	....	.....	do. do.	3	4	7 x 8	7 x 8
Sterling, No. 1,	Natural,	....	.....	do. do.	4	3	7 x 8	7 x 8
Sterling, No. 2,	Natural,	...	.....	do. do.	2	7	7 x 8	7 x 8
Sterling, No. 3,	Natural,	....	.....	do. do.	2	2	7 x 8	7 x 8
Cora,	Natural,	....	.....	14	2	2	7 x 8	7 x 8
Spring Grove,	Natural,	....	.....	24	3	1	6 x 7⅛	7 x 8⅛
Jackson,	Natural,	....	.....	16	3	2	7 x 8	7 x 7
Clarissa,	Natural,	....	.....	See mo. report,	3	4	7 x 8	7 x 8
Fort Hill,	Natural,	....	.....	do. do.	2	6	8 x 8	8 x 8
Grace,	Furnace,	....	6 x7	65	4	8	75	56
Coal Brook,	Natural,	....	.....	25	2	3	52	45
Plumer,	Furnace,	...	6 x6	See mo. report,	3	4	8 x 8	8 x 8
Connellsville Shaft,	Fan,	6	.....	do. do.	2	5	5½ x 8	6 x12
*Pennsville.								
Trotter,	Fan,	6	.....	do. do.	2	....	6 x10	6 x10

TABLE III—*Continued.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Number of persons employed inside.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Leisenring, No. 1,	Fan,	20		See mo. report,	2	12	Area, 100	Area, 44
Leisenring, No. 2,	Fan,	20		do. do.	2	20	8 x11	11 x 6
Wheeler,	Fan,	6		do. do.	4	6	Area, 56	Area, 64
Morreli,	Fan,	8		do. do.	2	14	Area, 100	Area, 105
Uniondale,	Exhaust steam,			do. do.	2	4	64	60
Anchor,	Exhaust steam,			37	2	2	5 x 6	7 x 6
Dunbar Coke Works,	Exhaust steam,			23	2	3	55	56
*Deer Park.								
Hill Farm,	Exhaust steam,			See mo. report,	3	5	7 x 8	7 x 8
Ferguson,	Exhaust steam,				3	3	52	63
*Mount Braddock.								
Percy,	Fur. and exhaust steam,			25	2	4	50	53
Youngstown,	Exhaust steam,			See mo. report,	4	15	24 x26	9 x11⅛
Lemont,	Exhaust steam,			25	2	2	7 x 8	7 x 7
Stewart Furnace Company,	Exhaust steam,			See mo. report,	2	4	7⅛x10	7 x10
Leith,	Fan,	6		do. do.	2	26	8 x 6	6 x 7
Redstone,	Exhaust steam,			do. do.	2	10	11 x 6	9 x 7
Oliphant,	Exhaust steam,			do. do.	2	5	7 x10	9 x10
Fairchance,	Natural,			do. do.	2	2	6⅛x 5⅛	5⅛x 6
Bliss & Marshall,	Natural.			do. do.	2	2	6 x 8	6 x 8
Tremont,	Furnace,		6 x7	do. do.	2	6	14 x 7	7 x 6
Little Redstone,	Natural,			25	2	2	7 x 7	7 x 7
Little Pittsburgh,	Natural,				2	2	7 x 8	7 x 8
Carondelet,	Furnace,		6 x6	See report,	2	4	8 x 8	7 x 7
Turnbulls,	Furnace,		3 x4	do.	3	8	42	38
Excelsior,	Furnace,		3 x4	25	2	2	37½	34
Bargeddie,	Furnace,		3 x4	See report,	2	2	6 x 6	6 x 6
Snow Hill,	Furnace,		6 x7	do.	2	7	60	66
Merchant,	Natural,			12	2	1	43½	
Alps,	Natural,			18	4	3	33	28
Cedar Hill,	Natural,			60	3	6	39	42
Garrows,	Furnace,		2½x4	80	2	4	44	37½

Climax,	Furnace,	Large fire-grate,	63	2	4	33	40
Umpire,	Furnace,	6 x7	See report,	5	5	7 x 7	7 x 7½
†Enterprise.							
†Maher.							
†Philson Iron and Coal Works.							
†Berlin.							
†Buffalo Creek.							
Casselman,	Furnace,	Basket fan, 3 x3	18	2	1	37	25
Hobiltzell Mine,	Exhaust steam,		See report,	2	3	26	40
Tub Mill Run,	Natural,		15	3	2	57	51
†Williams,	Natural,			2			
Cochran,	Natural,		See report,	2			
†Frog Hill,	Natural,			2			
Fairview,	Furnace,	12 feet area,	See report,	2	4	7 x10	Area, 15
Hocking & Co.'s Mines,	Natural,		do.	3	5	9 x 6	8 x10
†Keystone.							
Shaw,	Furnace,	3 x3¼	See report,	3	7	6 x14	6 x 6
Mount Equity,	Furnace,	5 x6	do.	2	. . .	5 x 5	6 x14
Brown's,	Furnace,	12 feet area,	do.	1	3		
Maher Mines,	Natural,			2	2		
Defiance,	Natural,		12	2	1		
Everett Iron Company's Mines,	Natural,		13	2	6		
†Cunard Shaft.	Furnace,	6 x 6	35	2			
†Deval's.							
*Lane Mine, No. 2.							
*Lane Mine, No. 1.							
New Mine, Hagan & Well's,	Natural.						
Snowden Mine,	Natural.						

*Mines which have not been in operation during the year.
†Mines which were operated, but did not employ the number of persons that brought them within the provisions of the law.

TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the Fifth Bituminous Mine District, for the year ending October 31, 1884.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Clinton,	196	109,760	168	9,408	204	11,424	211	11,816	188	10,528	221	12,376	194	10,864	186	10,416	222	12,432
Carondelet,	185	11,840	165	5,940	145	7,105	180	11,520	170	6,120	175	8,570						
Cumberland,	90	10,000	. . .	. . .	120	9,600	90	10,000	. .	. . . .	120	9,600	91	10,000	. . .	. . . .	100	8,400
Diamond,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . . .	. . .	. . . .	. . .		. .	9,600	. .	3,800	. .	6,200
Eagle,	70	4,410	20	1,120	100	4,200							190	11,970	60	2 880	145	6,090
Franklin,	114	6,384	104	5,824	136	7,616	146	8,176	133	7,448	218	12,208	113	6,328	93	5 208	126	7 056
Foundry,	800	33,600	190	7,980	600	32,400							445	18,690	175	7,350	690	37,260
Fairehance,							200	9,600	100	4,800	150	6,900	250				80	
Frick,	240	10,080	40	2 080	210	10,080	.	. . . .	. . .	. . .	. .	. . .	245	10,290	40	2,080	210	10 080
Henry Clay,	250	12,000	40	2.240	290	11,600	. . .	. . .	. . .	. . . .	. .	. .	300	14 400	50	2,800	360	14 400
Leith,	483	20,286	168	10 080	478	27,490												
Morgan,	165	7,920	50	2,400	360	15 120			. . .				160	7,680	60	2,880	360	15,120
Morrell,	290	29,000	64	4,096	277	29.085	306	30,600	68	4,352	291	30 555	325	32,500	68	4 352	309	32,445
Mount Equity,	600	15,000			190	15,960	640	16,000	.		190	15,960						
Painter,							.	.	. . .	.			. . .	10,820	. .	4,211	. . .	8,500
Shaft, No. 1,	350	17,500	235	11,500														
Shaft, No. 2,	480	23,040	140	8 820	340	20.230	700	33,600	290	18,270	460	32,800						
Summit,	170	8.160	60	3,120	215	12.040							380	18 240	150	7,800	485	27,160
Tip Top,	150	9,450	30	9.440	190	9 120				. .			100	6,300	40	1 920	260	12 480
Tyrone,	250	14,000	225	12,600	260	14,560	300	16,800	300	16,800	320	17,920	400	22 400	400	22 400	450	25,200
Trotter,							540	30.240	490	26.460	495	29.700	400	22,400	300	21,060	385	23,100
Umpire,	240	11.760	240	12 600	240	12,600	310	15,190	310	16,275	310	16,275						
Valley,	120	6 720	60	2,880	500	19.500							130	7,280	25	1 200	560	21,840
Wheeler,	128	7,168	58	3.712	113	7.232	127	7,112	60	3,840	112	7,168	130	7,280	60	3,840	64	7,232
White,	300	15,600	40	1,920	4,440	14 080			. .			. .	160	8 320	50	2,400	500	16,000
Youngstown,	570	50,000	. . .	. .	760	53 150	1,170	44,080	. .	. . . .	550	39,187	810	31,360	. . .	. . .	680	48,450

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Anchor,													220	6.600	60	2,940	340	14,280
Clinton,	206	11,526	173	9,688	218	12 208	186	10.416	154	8.624	192	10,752	163	9,128	141	8,495	168	9,408
Carondelet,							180	11.520	185	6,660	165	8.105						
Cumberland,	90	10 000			100	8,400	119	10,000	101	5,670	266	9,600	119	10,000	125	7,000	266	9,600
Cunard,	200	6,000	100	1 200														
Diamond,		11,930		5,000		7 920	140	7,840										
Eagle,	200	12.600	56	3,136	225	12,600												
Franklin,	124	6 944	113	6,328	184	10.341	66	3 696	52	2,912	74	4.144	152	8.512	112	6 272	165	9.240
Foundry,	470	33,840	120	6,720	600	33,600	360	16,200			350	19,600	270	15,930	256	23,520	500	24,500
Fairchance,	280	13,440			80	4,480	260	12,480			70	3,920	400	22,400	400	22,400	400	22,400
Fairview,								8,500				7,200		8.200				9.000
Frick,	200	10,800	40	2,080	220	10,560							140	12,160			120	17,280
Hill Farm,	350	19,600	200	11.200	350	19 000	350	19,600	200	11,200	350	19,000						
Henry Clay,	350	16,800	40	2,240	240	14,400	310	11,360			230	11,040	270	16,740			330	20,580
Hyle,							100	5 600										
Lemont,	300	16,800			550	26.950	260	16.640			550	26 950						
Morgan,	160	8.640	30	1 440	120	8 640	360	16,200			350	19 600	270	15,930	256	23.520	500	24,500
Morrell,	310	31.000	64	4,096	295	30,975	305	30,500	62	3,968	290	30.450	262	26,000	58	3,712	250	26,250
Mount Equity,	420	12 600			150	12,600	590	14 750			210	14 700						
Painter,		10,480		4,000		8,700	150	8 400	100	4,900	200	8.400						
Plumer,							204	13,056			158	10,112	195	12,480	155	9,920	180	11,520
Sterling,	470	29,610	120	7,560	420	26,880	480	30 240	150	7,350	450	28,800	220	13.860	80	4,480	180	11,520
Shaft, No. 1,	270	13.600	515	5,150			540	23,760			320	23,040	525	25,300	160	10,240	285	20,520
Shaft, No. 2,	780	37,440	280	17,640	520	37.275							212	13.356	210	12,285	262	13 736
Summit,	230	33,120	90	4.680	310	34,720	200	8,400			450	32,400	900	50,365			780	56 680
Tip Top,	360	27.720	95	4 560	570	29.640							210	11,940			500	18,000
Tyrone,	200	11.200	200	11,200	250	14 000	300	16 800	300	16,800	350	19,600	200	11,200	200	11,200	240	13,440
Trotter,	540	30,240	490	26,460	515	30,900	500	28,000	450	24,300	450	29,700	550	30,800	360	20,100	510	33,660

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.					MARCH.					APRIL.				
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet passing out.
Umpire,	350	25,200	55	2,640	500	24,000	120	5,820					465	22,785	465	24,412	465	24,412
Valley,	140	7,840	70	4,480	122	7,808	128	7,168	59	3,776	270	10,800	440	17,870	67	4,288	290	24,010
Wheeler,	530	22,260	60	2,880	700	22,400	60	2,520			111	7,104	154	8,624			134	8,576
White,	1,580	62,260	550	39,187							110	4,800	340	17,520			500	25,540
Youngstown,													960	35,680			630	44,887

TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Clinton,	174	9,744	163	9,128	186	10,416	181	10,136	83	4,648	194	10,864	183	10,248	177	9,912	204	11,424
Carondelet,	185	11,840	195	7,020	160	7,840												
Diamond,	..			..	..			10,830	..	4,300	.	8,200						
Eagle,		12,600				9,700	130	8,190					200	12,600			150	9,450
Franklin,	155	8,680	130	7,280	300	16,800	118	0,608	167	9,352	166	9,296	187	10,472	142	2,952	218	12 208
Foundry,	80	5,040	.	..	510	24,990	280	15,120	290	16,240	560	27,440						
Fairchance,	.	22 400	.			22,400												
Fayette,	380	34,200	200	16,200	400	36,000	200	18,000	180	14,600	600	54 000	160	14,400	120	9,720	320	17,920
Fairview,		8,900	...	...		8,850					.	7,800	...	8 600		.		9,000
Frick,		26,980	.	...		10,710	260	15,680			400	21,600	260	15,680	..	...	280	15,120
Hill Farm,	..			..	...		320	17,920	200	11,200	350	19,000						
Henry Clay,	..	23,520			..	37,675	290	12,180	150	9 600	190	7,980	180	10,080	130	5,460	220	9 240
Leith,	..	27,045	166	9,960	..	27,410												
Leisenring, No. 1,				..	.		..	..	..	. .	..	...	850	44,200	260	16,640		
Leisenring, No. 2,													665	58.520	397	25,011	1,050	56,700
Morgan,	230	12 420	300	16,880	510	24,990	280	15,120	290	16,240	560	27,440	350	17 150	120	7,560	310	17 360
Morrell,	314	31 400	64	4,096	300	31,500	270	27,000	70	4,480	262	27,510	285	28,500	69	4,416	271	28,455
Painter,		10,000		4 000		8 000		10,000		4,000		8.000						
Plumer,	260	16,440	140	8,960	255	16,320	270	17.280	140	8,960	250	16.000	290	18,560	140	8,960	280	17,920
Stewart,							150	13,500	155	7 440	180	12.600	136	12,240	155	7,440	175	12,250
Sterling,							210	13,230	140	8.820	180	10,080						
Shaft,	580	25,520	145	9,280	270	19,440	525	23,100	130	8,320	295	21.240	490	21 500	130	8 320	250	18 000
Shaft, No. 1,		43 400	...	23,960	...	42.480		44,100	...	16,960		46,200						
Shaft, No. 2,	610	53.690	305	19,215	890	49,725	825	72,600	396	24,948	1.200	66 510						
Summit,	...	32 340				40 500	350	15,000	160	10,240	380	30,780	340	27,540	270	17,280	400	32.400
Tip-Top,		15 300				18 200	420	15,120	70	4.480	310	11.160	500	18 000	110	7,040	450	12 600
Tyrone,	200	11.200	200	11 200	250	14.000	200	11,200	200	11,200	240	13,440	200	11,200	200	11.200	250	14,000
Trotter,	540	30 240	580	27,840	490	32,140	520	29,120	360	17,280	490	31,340	490	29,400	250	12,000	400	24,000

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.					JUNE.					JULY.				
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Umpire,	378	18,522	378	19,845	378	19,845	350	17,150	350	18,375	350	18,375	340	17,660	340	17,850	340	17,850
Valley,	310	21,360			560	27,440	490	39,690			780	38,220	510	24,990	190	10,640	620	30,380
Wheeler,	155	8,680	68	4,352	138	8,832	130	7,280	70	4,480	120	7,680	142	7,952	65	4,160	124	7,936
White,	190	11,970			380	19,680	230	11,040			230	16,560	80	4,480			200	13,200
Youngstown,													780	30,160				

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Cumberland and Elk Lick Coal Company,	.	. . . .	. . .	. . . .	. . .	. . . .	119	10,000	125	7,000	366	9,600						
Clarissa,	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .				. .		95	5,320	. . .	. . .	100	5.600
Diamond,								10.800		3 600		8 700						
Eagle,	110	6.930	. .	. . . .	120	7,560	160	6,720	100	5,600	410	33 210	150	11,520	180	11,520	430	34 820
Foundry,	190	10,260	.	. . .	260	14,560	360	19,440	100	5,600	410	33.210	390	21 060	180	10,080	520	29.120
Frick.	. . .		.	. . .	. .		90	4,860			160	8,640	110	5,490		. .	150	8,100
Fair View,		8,600		.		8,850		8,700		8 700		8 900						
Fayette,	150	13 500	120	9,720	240	13,400	240	21,600	150	12.150	300	16 800	180	14,580	120	9,720	240	13.440
Fairchance,		5,430																
Franklin,	136	7,616	124	6,944	244	13 664	184	10,304	172	9 632	213	11,928	104	5,824	86	4.810	136	7,616
Henry Clay,	300	17,280			256	10,500	170	7,140	140	6,860	260	10,920	120	6,720	100	4,900	350	14,700
Hill Farm,	. .	20,000	200	12,000	700	28,000												
Leith,	. .	. . . .					335	16.080			330	15,960	560	26,880				32,760
Morrell,	.	. . .					375	37,500	80	5,120	357	37,485	600	60,000	202	12.928	609	63.945
Morgan.	170	9,520	130	2,280	260	14 560	360	19.440	100	5,600	350	19.600	390	21,060	180	10,080	520	29,120
Mount Equity,							160	13.440			310	9,500						
Plumer,	280	17 920	140	8 960	270	17,280	280	17.920	140	8 960	270	19 440	280	17,920	140	8,960	270	17,280
Painter,								8.920		3,200		9,200						
Redstone,													235	15 510	205	14.350	233	14.079
Shaft, No. 1,		54,210	240	15,360		52 160		55.160	260	16.640		52,160		54,040	260	16.640		53,900
Shaft, No. 2,	767	67,496	423	26.649	1,002	66,132	803	70 664	370	23,310	1.003	66,198	730	64,240	293	18,459	925	01,050
Summit,	310	25 110	200	12.800	350	28.350	210	13 230	200	12.800	410	33,210	210	11.760	110	6.160	430	34.820
Sterling,	204	11,424	68	3,808	175	9,800	204	11,424	113	6,328	178	10,348	160	8,960	102	5.712	153	8,568
Shaft,	565	24,860	255	16,320	250	18,000	550	24 200	160	10,240	270	19,440	550	24,200	160	10 240	270	19,440
Stewart Iron Company,	. . .	. .			.	. . .	125	8,750	160	7,680	155	13,950	109	9.810	150	7.200	188	13 160
Snow Hill,	. . .	. .	. .	,	.	. . .							460	27,600	370	19.980	440	29.040
Tremont,													130	11,740	110	5 390	390	16,380
Trotter,	550	33,000	390	18,720	500	30,000	500	30,000	350	16,800	480	28,800	485	29,100	450	21,600	520	31 200

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

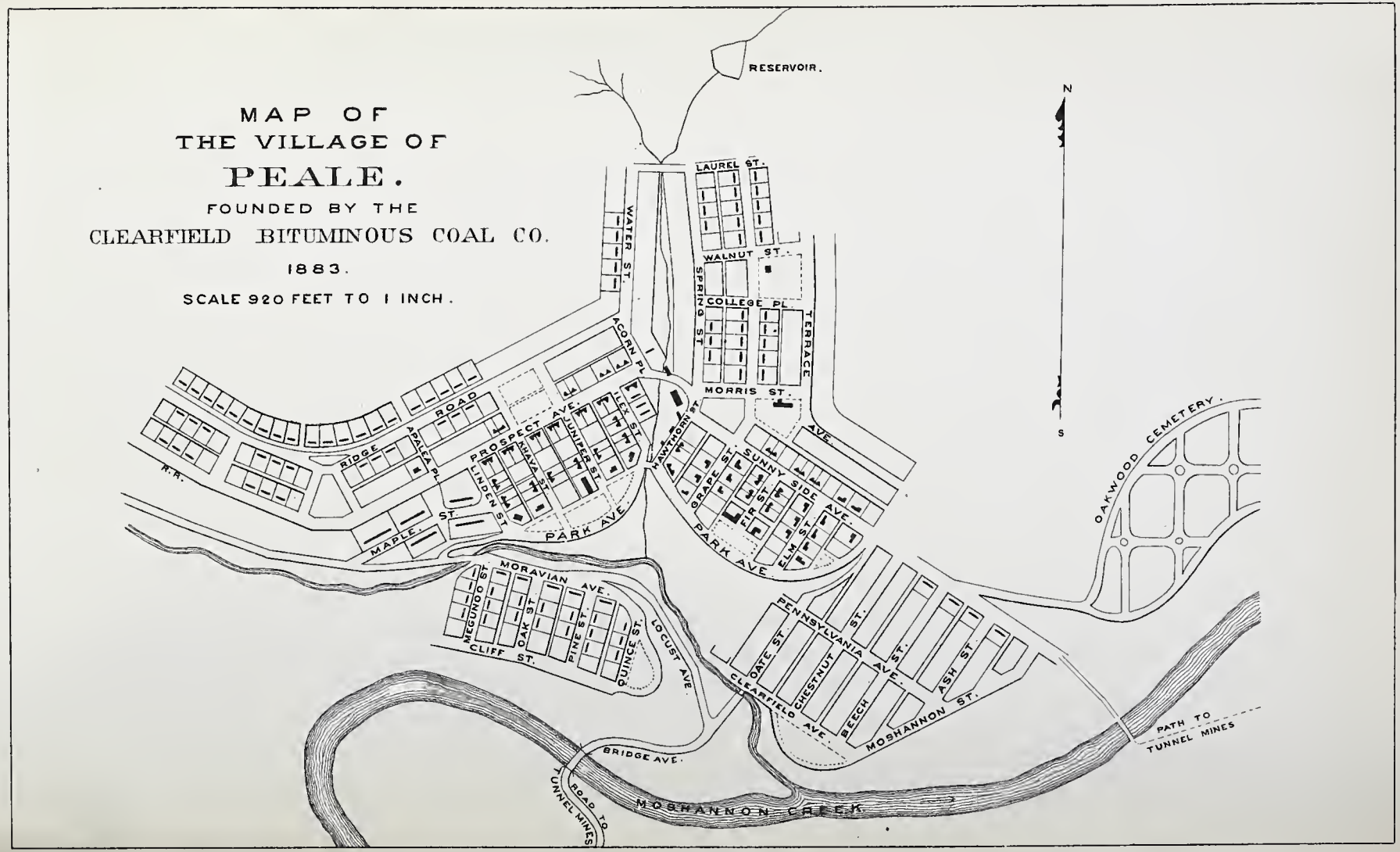
NAME OF COLLIERY.	AUGUST.					SEPTEMBER.					OCTOBER.				
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Tyrone,	140	7,840	140	7,840	170	9,520	100	5,600	100	5,600	200	11 200	80	3.360	50	2 800	120	5 040
Uniondale,	170	9,810	. .		500	24 500	310	27,900	100	5,400	420	20.580	100	5 600	130	7,020	770	32 340
Valley,	150	8,400	70	4,480	130	8,320	130	7,280	62	3,968	113	7,232	150	8,400	80	5,120	132	8.448
Wheeler,	. . .	28,780	. .		500	35,625					. . .	. . . . .	. . .	42,480	. . .	. . . . .	. . .	46,312
Youngstown,																		

LIST OF ACCIDENTS *occurring in the mines of the Fifth Bituminous Coal District of Pennsylvania, for the year ended October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of Investigation.	Nature and Cause of Accident.
Dec. 4	William Ham,	28	Married,	1			Dec. 5	Killed by explosion of gas in Youngstown Coke Company's mines.
4	A. A. Childester,	27	Single,				6	Killed by fall of roof coal at the H. C. Frick Company's mines.
Jan. 2	John Schirlock,	55	Married,					Leg and arm bruised by being caught by empty cars and drawn under the wheels in Morrell mines.
30	Patrick McGettigan,	17	Single,				Jan. 30	Head badly hurt by cars catching him between the pillars while putting in sprags.
Feb. 7	William Multhing,							Struck by coal car at Shaft, No. 1.
20	Daniel Buckner,	35	Married,	2				
20	William Searing,	35	Married,	5				
20	Mike Heffron,	32	Married,	6				
20	John Murray,	34	Married,	1				
20	James Baker,	34	Married,	2				
20	A. J. Hackney,	35	Married,	1				
20	Thomas McGeary,	35	Married,	3				
20	Joe Backos,	28	Married,					
20	Melcke Beppo,	35	Married,	2				
20	George Kallos,	25	Married,	1			Feb. 20	Killed by gas explosion in Shaft, No. 2, of the Connellsville Coal, Coke and Iron Company.
20	John Hart,	25	Single,					
20	David Lloyd,	22	Single,					
20	William Davis,	23	Single,					
20	Patrick Kennedy,	20	Single,					
20	James Tracy,	45	Single,					
20	John Buckley,	30	Single,					
20	Peter Waters,	31	Single,					
20	Gary May,	24	Single,					
20	Ali. Wamus,	30	Single,					
Mar. 12	Thomas Cairns,	55	Married,					Foot bruised by stone while drawing a pillar in Morrell mines.
27	Daniel Gallagher,	13	Single,					Head cut by kick from a mule in Morrell mines.
13	Richard J. Fennel,	27	Married,	1			Mar. 14	By a fall of roof coal at Youngstown mines.
April 26	Louis Bruner,	30	Married,					Collar-bone broken by being caught between car and pillar in Connellsville Coal, Coke and Iron Company's mines.
12	Jacob West,	22	Married,	1			Apr. 14	By a fall of slate, was killed in Lemont mines.

LIST OF ACCIDENTS—*Continued.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
April —	Henry Landis,	23	Single,	..				Collar-bone broken in Fairview mines.
May 28	William D. Jones,	22	Married,	..			May 29	Killed by being caught between two wagons while uncoupling cars in Trotter mines.
26	James Long,	23	Single,	..				Leg broken between knee and ankle by being caught between cars in Umpire mines.
June 3	Thomas Frasier,	22	Single,	..				Leg broken above ankle by fall of top coal in Shaft, No. 1.
Sept. 8	Charles Rankins,	22	Single,	..			Sept. 10	Bone of leg broken by fall of roof coal while hauling out car.
Oct. 22	Peter Riley,	35	Married,	4			Oct. 27	Killed by fall of slate in Excelsior mine.
27	George Cunningham,	30	Married,	1				
27	Thomas Cole,	42	Married,	6				
27	William Minard,	27	Married,	3				
27	Frank Nicklow,	45	Married,	3				
27	Sol. Vansickle,	28	Married,	1				
27	James Price, Sr.,	50	Married,	3				
27	Jesse Miller, Sr.,	50	Married,	5				Killed by an explosion of carbureted gas in the mine of the Youngstown Coke Co., Limited.
27	A. J. Lape,	29	Married,	2				
27	Abe Nilson,	40	Married,	4				
27	Albert Taylor,	29	Married,	.				
27	James Price, Jr.,	18	Single,	..				
27	Jesse Miller, Jr.,	16	Single,	..				
27	William Nicklow, Jr.,	18	Single,	..				
27	Joseph Trebley,	21	Single,	..				
27	Jacob Cole, Sr.,	..	.....	..				
27	David Cole,	..	.....	..				
27	James Darby,	..	.....	..				Injured by gas explosion at Youngstown Coke Company, Limited, mines.
27	Chauncey Wilson,	..	.....	..				
27	Daniel Cole,	..	.....	..				


MAP OF
THE VILLAGE OF
PEALE.
FOUNDED BY THE
CLEARFIELD BITUMINOUS COAL CO.
1883.
SCALE 920 FEET TO 1 INCH.
RESERVOIR.
N
S
LAUREL ST.
WALNUT ST.
COLLEGE PL.
MORRIS ST.
WATER ST.
SPRING ST.
TERRACE
AVE.
ACORN PL.
RIDGE
ROAD
APALEA PL.
PROSPECT AVE.
JUNIPER ST.
FLEX ST.
HAWTHORN ST.
LINDEN ST.
MAPLE ST.
PARK AVE
R.R.
GRAPE ST.
SUNNY SIDE AVE.
ELM ST.
OAKWOOD CEMETERY.
MORAVIAN AVE.
MEGUNDO ST.
OAK ST.
PINE ST.
QUINCE ST.
LOCUST AVE.
CLIFF ST.
PENNSYLVANIA AVE.
OATE ST.
CHESTNUT ST.
BEECH AVE.
ASH ST.
CLEARFIELD AVE.
MOSHANNON ST.
PATH TO
TUNNEL MINES
BRIDGE AVE.
ROAD TO
TUNNEL MINES
MOSHANNON CREEK

SIXTH DISTRICT.

To the Hon. J. SIMPSON AFRICA,

Secretary of Internal Affairs, Commonwealth of Pennsylvania:

SIR: I have the honor to submit to you my report of the Sixth Bituminous District for the year ending October 31, 1884. I am pleased to inform you that considerable improvement has been going on in this district within the past year. Many operators have abandoned the single-entry system and adopted the double, which will be of advantage to them in the future. Although the year that has passed has been characterized for its general dullness, yet more coal is being mined now than was ever mined in more prosperous years. Clearfield and Cambria counties are being rapidly developed, 17 new openings finished or about finished in these two counties during the year. The capacity of this district is nearly double the amount of last year. This, the Sixth District, commenced last year with 109 mines, now it has 126. There have been employed, during the year, 5,546 persons inside and 579 outside, making 6,125 persons employed in and about the mines in this district. I am sorry to inform you that there have been 51 accidents, with 59 casualties. 15 of these were fatal, and 44 non-fatal.

Total amount of coal mined,	4,905,020 tons.
Number of mines in the district,	126
Number of persons employed inside,	5,546
Number of persons employed outside,	579
Total number of persons employed,	6,125
Mules inside and outside,	580
Number of fatal accidents,	15
Number of non-fatal accidents,	44
Total accidents,	59
Number of tons per fatal accident,	327,001
Number of tons per non-fatal accident,	111,478
Average number of days worked during the year,	213
Average price paid for mining per ton,	38¼ cts.
Number of coke-ovens in the district,	265
Total amount of coal mined during the year in tons 2,000 pounds each,	4,905,020

Accompanying this report will be found a plate of the tipple, &c., of Ocean, No. 2, shaft, and, also, a draft of pit-wagon used at Whitehead & Co. collieries kindly given to me by G. L. Miller, C. and M. engineer, also, a print of the property of the same company in Clearfield, by the same engineer.

I have also pleasure in sending two prints, one of the town of Peale, and the other showing the position of three double openings at Grassplat.

The above drawings have been furnished by George H. Platt. superintendent, Clearfield Bituminous Coal Company.

Yours respectfully,

JOHN M. WATT.

TARENTUM, *November 29, 1884.*

LIST OF NEW OPENINGS AND IMPROVEMENTS DURING THE YEAR.

Whitehead & Co. have opened a colliery at Karthaus, Clearfield county. The coal is reached here by a plane 500 feet long; area of opening, 7×8 =42 feet. In this vein the coal is near the top of the mountain, and is of excellent quality, bidding fair to out-rival the famed Moshannon or Morrisdale basins.

Berwind, White & Co. are also opening on the same vein, which will be known as Eureka, No. 6. The coal is also reached at this place by plane.

W. E. Wallace is opening an extensive colliery at Ansonville, on the line of the Beech Creek and Clearfield railroad, which will be in operation in a short time. Size of openings, two in number, 7×8.

Fisher, Miller & Co. have opened Excelsior, No. 2, on the extension of the Coal Run branch, and is in operation now. The same company is also sinking a slope near Ramey, on the Moshannon Branch extension. This will be Excelsior, No. 3.

R. B. Wigton & Sons have opened a new colliery on the Moshannon extension, about five miles from Houtzdale, which promises to be a large colliery; opening, 9′×6′.

D. W. Holt & Co. have made a new opening on Mapleton branch, named Coaldale, No. 4, which will ship coal in a few days; size of opening, 7′×8′.

Thomas C. Heims & Co. have opened a new colliery, on Mapleton branch, named Drane Colliery; size of opening, 7′×8′. They will also ship coal in a few days.

Smittle & Co. have opened a new colliery, near Mountaindale, on the Bell's Gap railroad, which is shipping coal now; size of opening, 6′×7′.

Welch, Epley & Co. have opened a new colliery, named Atalanta, No. 3; size of opening, 7×8. The firm is now shipping coal.

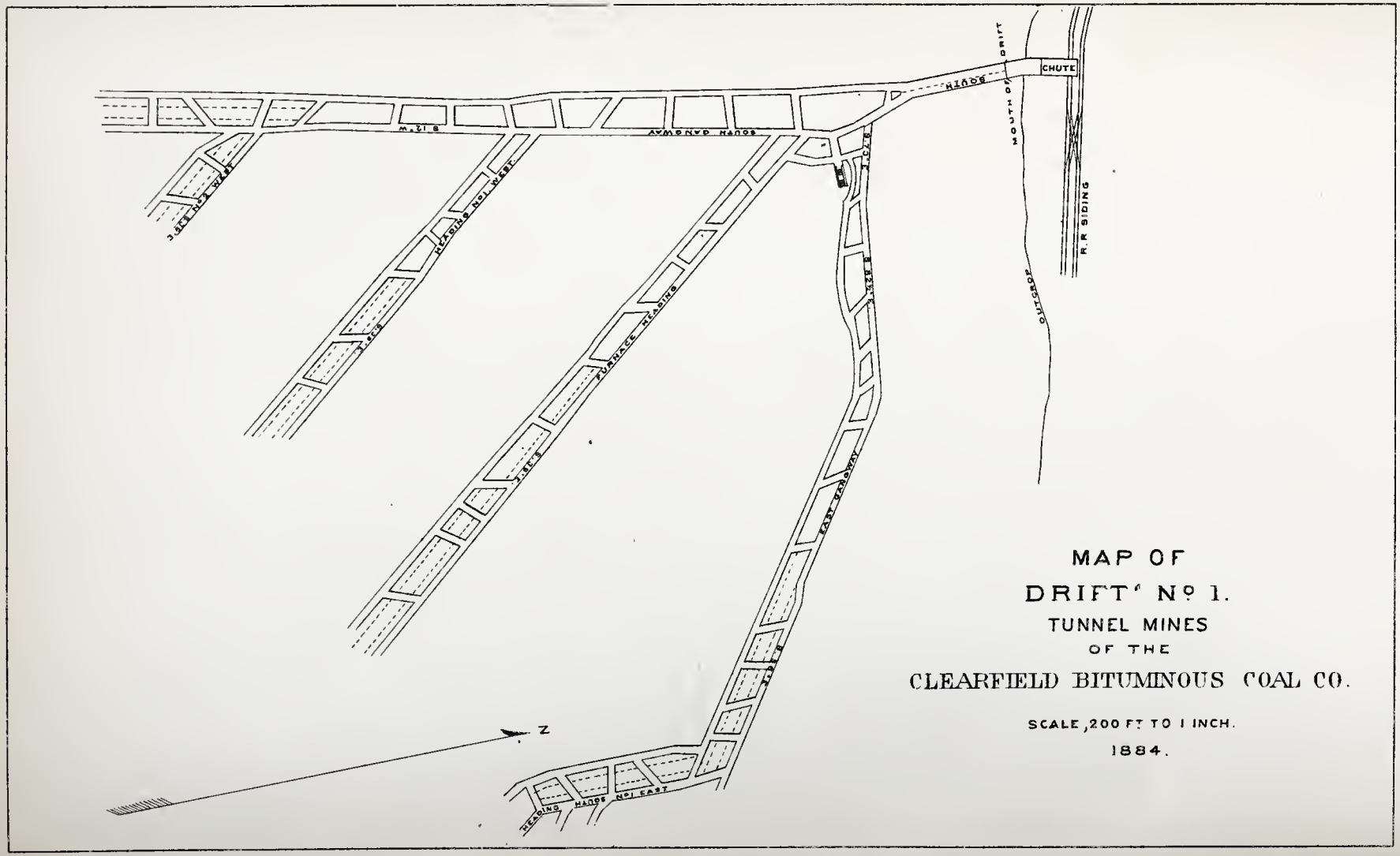
Nuttall, Bacon & Co., at Laurel run, have built a new furnace, 4×5, at the old works, and opened a new drift on Crowel run; size of opening, 7×8.

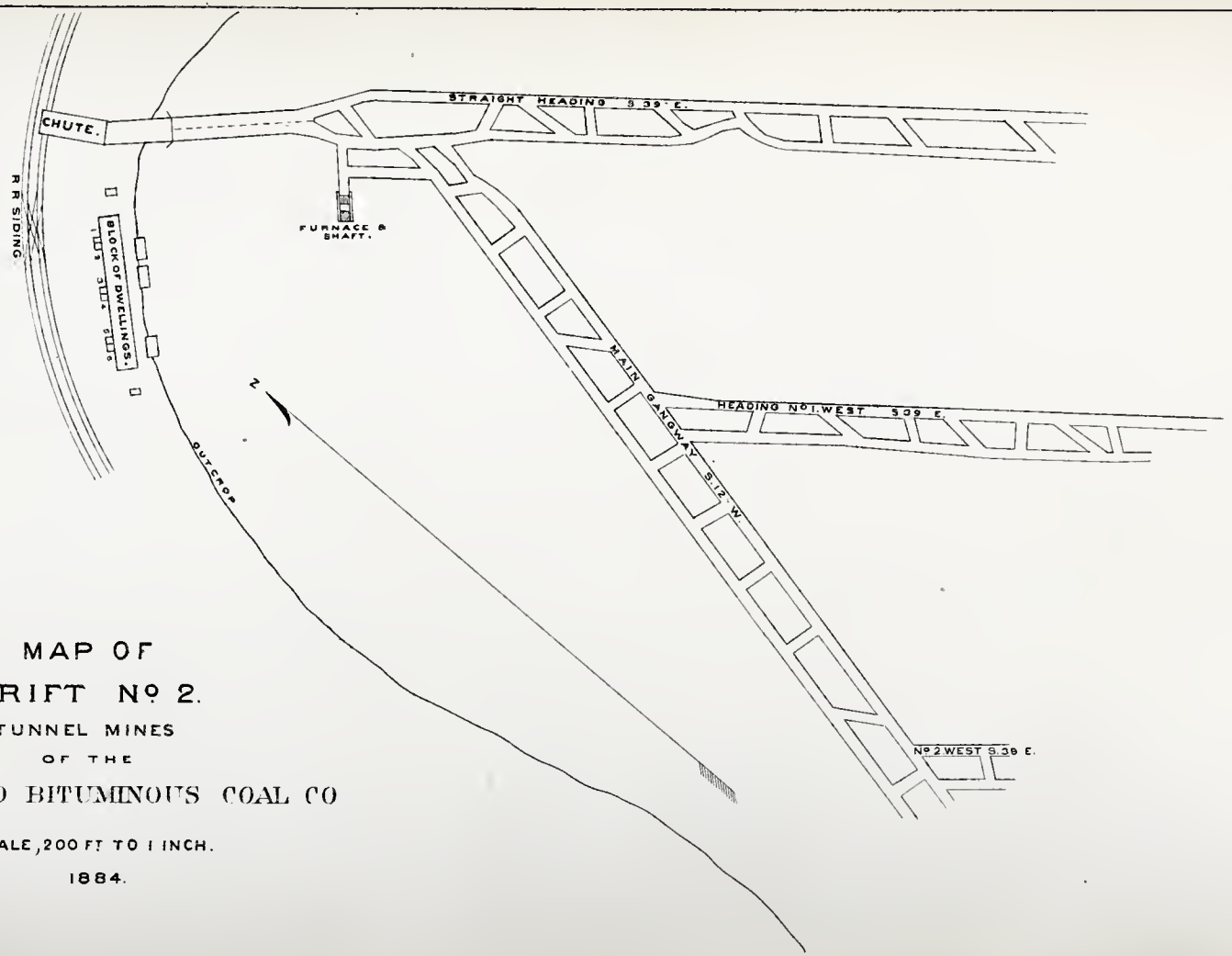
A new opening has been made at Logan colliery, to serve for both air and water; size, 5×6.

A new opening has also been made at Columbia, to serve for drainage and air; size of opening, 5×7.

At West Moshannon, the furnace has been overhauled, with considerable advantage to the air.

At Webster, No. 2, a small furnace has been built, which will materially assist the ventilation.


SOUTH
CHUTE
MOUTH OF DRIFT
R.R SIDING
OUTCROP
SOUTH GANGWAY
S 12° W
S 35° E
HEADING NO. WEST
S 55° E
FURNACE HEADING
S 22½° E
S 67½° E
EAST GANGWAY
S 22½° E
N
HEADING SOUTH NO. EAST
MAP OF
DRIFT Nº 1.
TUNNEL MINES
OF THE
CLEARFIELD BITUMINOUS COAL CO.
SCALE, 200 FT TO 1 INCH.
1884.



MAP OF DRIFT No 2.

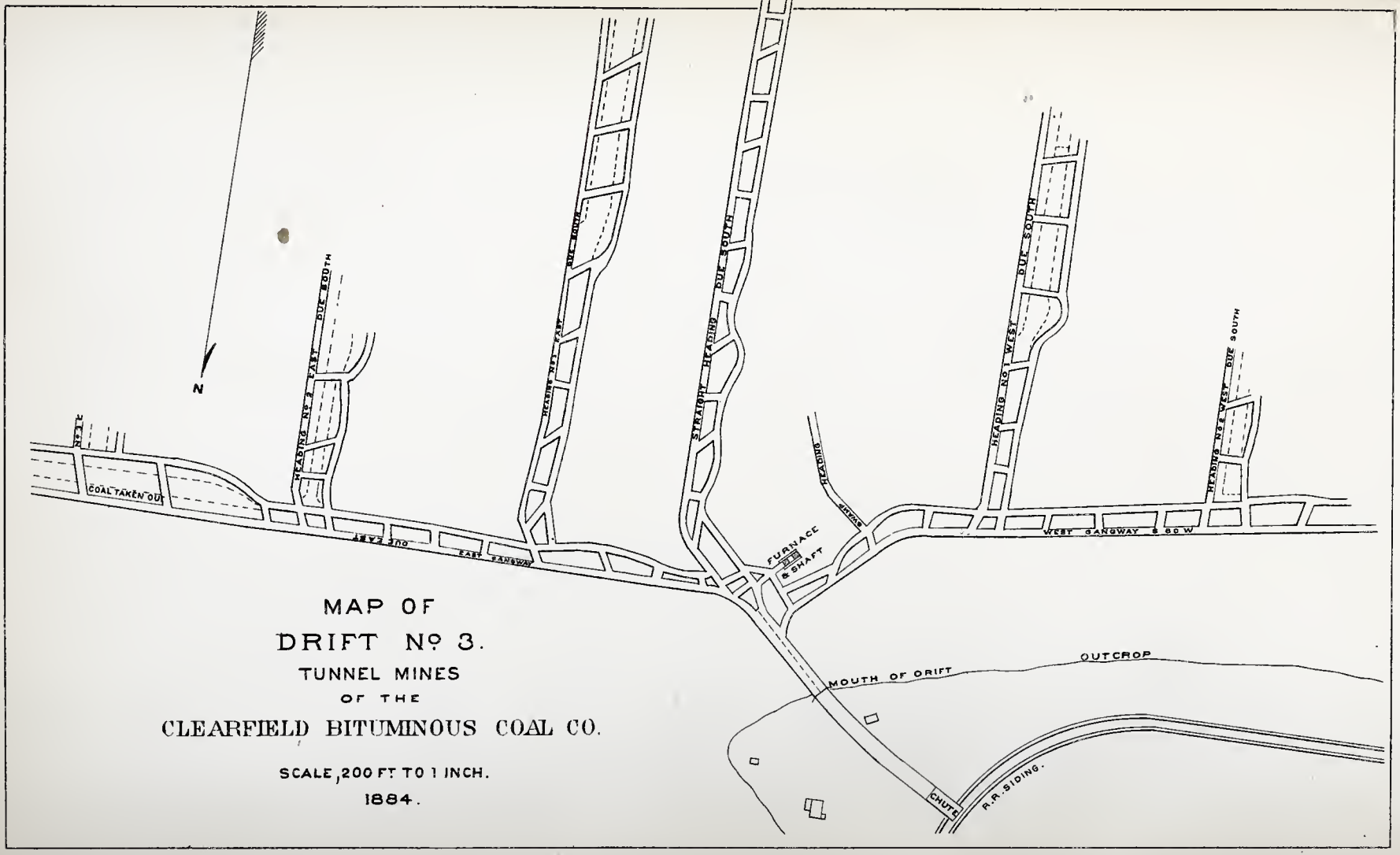
TUNNEL MINES

OF THE

CLEARFIELD BITUMINOUS COAL CO

SCALE, 200 FT TO 1 INCH.

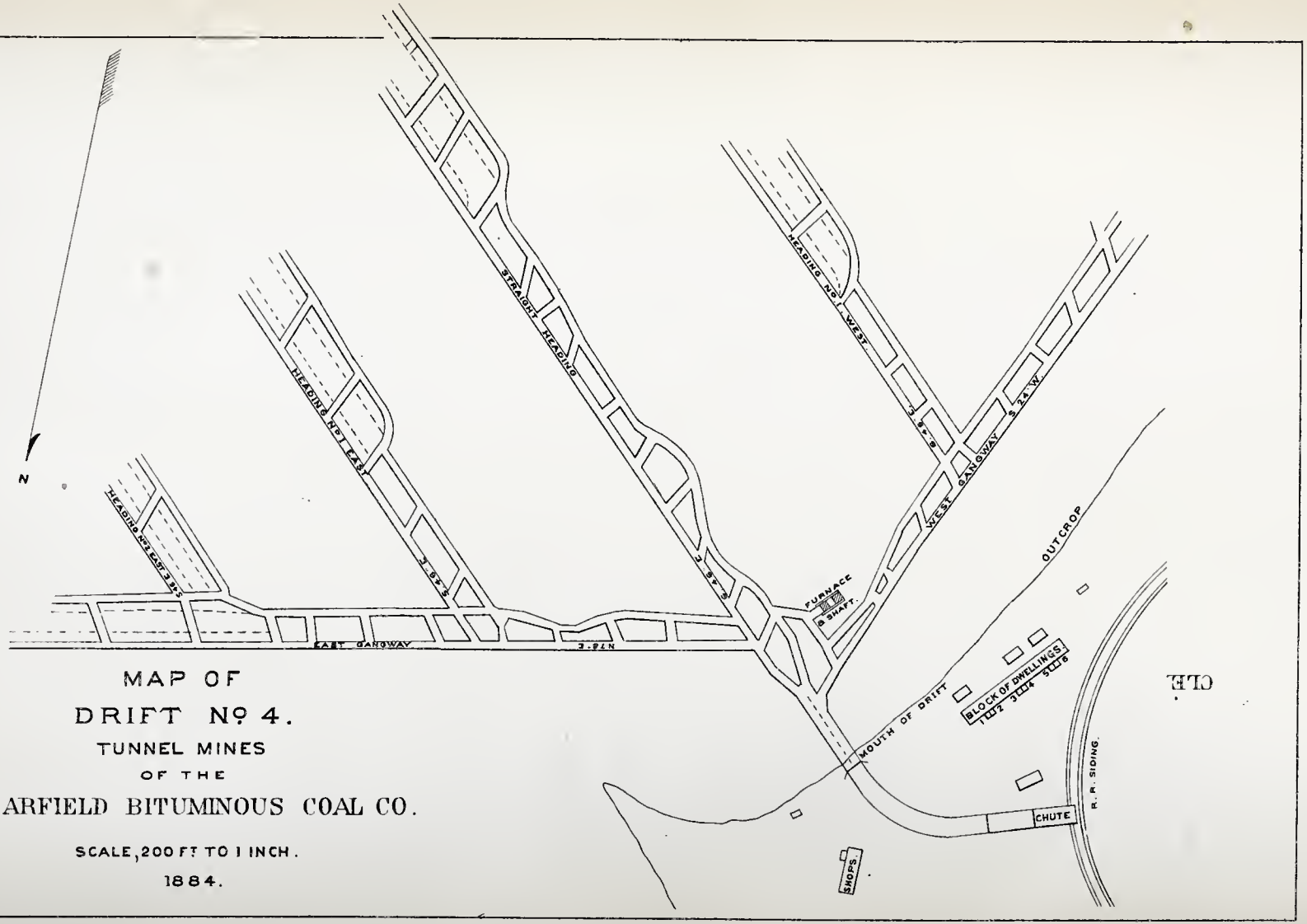
1884.



MAP OF
DRIFT No 3.
TUNNEL MINES
OF THE
CLEARFIELD BITUMINOUS COAL CO.

SCALE, 200 FT TO 1 INCH.

1884.



MAP OF

DRIFT Nº 4.

TUNNEL MINES

OF THE

CLEARFIELD BITUMINOUS COAL CO.

SCALE, 200 FT TO 1 INCH.

1884.

Ocean, No. 2, shaft was destroyed by fire December 27, 1883, and rebuilt April 29, 1884. I have been kindly given a draft of the new erection; also, a draft of the wagon, in detail, used by Whitehead & Co. at their works in Clearfield county. The drafts are from George L. Miller, C. and M. Engineer. They are sent with this report.

There is a new town and colliery being built and opened out at Peale, Clearfield county. This company—the Clearfield Bituminous Coal Company—has, at this place, built three hundred workmen's houses. They are substantially built, and provided with all conveniences. A fine spring of water was found upon the mountain side, which has been utilized and piped through these dwellings.

The openings of their mines excel anything in this district. A strict conformity with both the spirit and letter of the law has been observed in commencing operations. They have started on four double openings, 9×7 each, strongly timbered with white oak, one foot square. Three of these openings are quite close together, and will be, in due time, fitted up with the necessary machinery for hauling and mining purposes. I send you a print of the town of Peale, and also of the three openings. George H. Platt, superintendent.

CAMBRIA COUNTY.

J. C. Stineman has built a new furnace 5 × 6 which will help him. Webster, No. 3, has also built a furnace 5 × 6.

At Portage, J. C. Martin has put in one opening, a drift, and built a new tipple, and plane 400 feet; and he is also sinking a slope, the product of which will be run on to the same tipple.

Nivers & Co. are, also, putting in a drift at the same place 6 × 8, size of opening.

At Galitzin, the Galitzin Coal and Coke Company put down a slope 23° 300 feet, put up the necessary arrangements for hauling, and built fifty coke ovens. They are making an excellent coke at this place.

At the same place, Galitzin, Taylor & McCoy have built sixty-six coke ovens, and sunk a second opening 5 × 7, and 121 feet deep, and built a new shop 20′ × 40′.

S. C. Baker, at Kittanning Point, has sunk a slope 16° 400 feet, put up the necessary hauling machinery, built a tipple and a number of workmen's houses, &c.

Irvona Coal Company, near Coalport, has put in a new furnace 4 × 5, and thirty coke ovens, and they are making good coke.

At Logan Ridge a furnace has been built 5 × 6.

Berwind, White & Co. are putting in a new opening on Whiteside Run extension.

Holt, Chipman & Co. have built twenty-one tenement houses and barn at Coaldale No. 3.

At Griffith, Johnstown, an air shaft 5′ diameter and 45′ deep has been sunk, and a furnace 4 × 5 has been built.

Elizabeth trestle and tipple were destroyed by fire in May last when the town of Brisbin was burned. It has since been rebuilt and is in operation.

Cambria Iron Company built thirty Belgian coke ovens; they have been in successful operation for some time. Also put in three new boilers for use of ventilating fan, and two powder magazines, and tramroad to ovens.

John C. Scott & Sons have opened up Webster, No. 3, built furnace 5 × 6 for ventilating mine, and built seventeen dwelling-houses, blacksmith's shop, barn, &c.

Berwind, White & Co. have built ten new dwelling-houses at Eureka, No. 3.

At Sterling, No. 1, coal-cutting machinery has been introduced during the year. A large engine, a Compresser, has been built, and the compressed air is conveyed through wrought-iron pipes. There are three cutting machines at work, two of the Lechner pattern and one of the Leg. The latter is an improvement on the Lechner, which has, itself, been improved by Mr. James V. Smith, of Houtzdale, by the removal of five cog-wheels, thereby reducing complication, friction, liability to breakages, and insuring considerable less noise when at work. One of these cutting machines will undermine, on the average, 112 tons of coal per day. The width of cutter is 3′ 6″; vertical cutting width, 4½″; and cutting depth, 4′ 8″; time of making cut when the machine is in place 4 minutes.

The introduction of machinery for mining purposes in this Clearfield region is an event of great importance, both to operator and miner. That production is cheapened by the economical use of machinery for mining and hauling purposes is beyond dispute, and here, where compressed air is available, water found in dips, as it almost always is, can be got rid of in a short time, the place dried, and the ventilation improved at the same time, thus giving great advantages to those who press to the front with such improvements.

LIST OF MINES THAT HAVE NOT BEEN WORKING OR ONLY PARTIALLY WORKING DURING THE YEAR.

Springhill has been idle all the year.

Coaldale, No. 2, has just commenced opreations after being idle all the year.

Victor, Nos. 1 and 2, have been worked only a short time this year.

Keystone has done nothing to speak of.

Atalanta, Nos. 1 and 2, have only been partially working during the year.

Penn, No. 2, has not been in operation the past year.

Beaver Run may be said to be abandoned.

Coalport worked out and abandoned.

Schuylkill has not been in operation this year.

Hildrup has not been in operation since January.

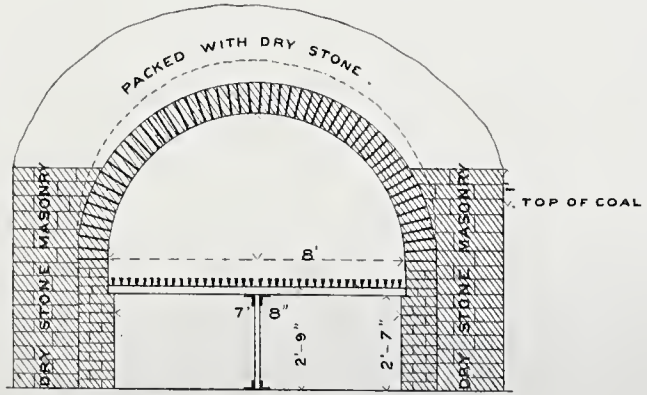
PLAN OF VENTILATING FURNACE

FOR THE

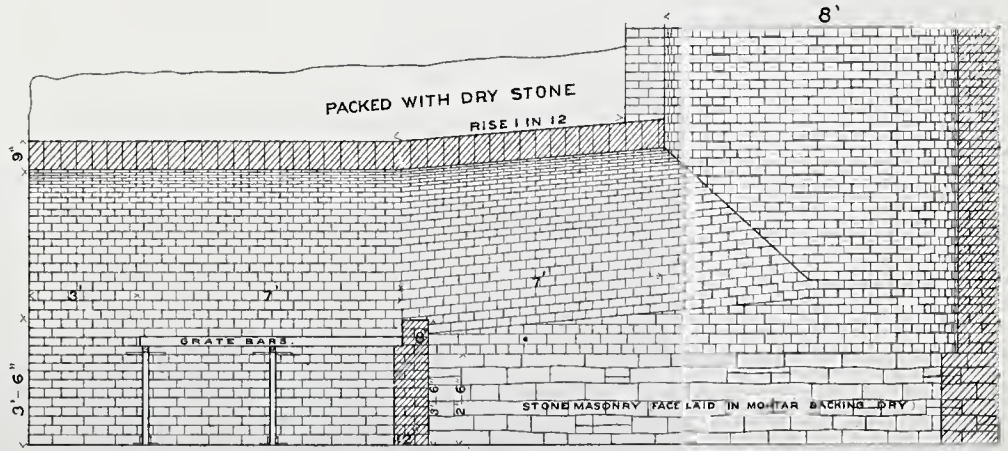
CLEARFIELD BITUMINOUS COAL CO.

SCALE 3/20" = 1 FOOT

1884.



CROSS SECTION.



LONGITUDINAL SECTION.

DESCRIPTION OF MINES—ALLEGHENY COUNTY.

Watson Shaft

Is located at the end of East street, Allegheny city, and is operated by Watson Bros.; it is sunk to the Upper Freeport vein, which is 3′ thick. Here they have commenced the long-wall system of mining, with every prospect of success, although sufficiently advanced to determine fully its utility when I last visited it, September 29. Matthew Howard, mining-boss.

Glenshaw Colliery.

Located on the P. & W. R. R., and operated by Samuel Spencer & Co., was in reasonable condition when last visited. John Hare, mining-boss.

Bellview Colliery.

Located on the W. P. R. R., and operated by the Bellview Coal Company. This colliery consists of two openings. No. 1 has been idle for some time. These works are in first-class condition. J. J. Finney, mining-boss.

Tarentum Colliery.

Located at Tarentum, and operated by Kennedy & Loucks. The colliery is in reasonable condition. William Coss, mining-boss.

Natrona Colliery.

Located at Natrona. Works in good condition when visited, but have been shut down for the last two months, natural gas having taken the place of coal.

ARMSTRONG COUNTY.

Glen Colliery.

Located on the A. V. R. R., and operated by J. R. Smith. Ventilation natural, drainage good, and the works altogether in good condition. Samuel Dickey, mining-boss.

Kittanning Colliery.

Located near Kittanning, and operated by the Kittanning Iron Company, Limited. Ventilation poor. I instructed them to put up a furnace, and they have commenced operations having that end in view. James Curren, mining-boss.

Stewardson Colliery.

Located at Stewardson furnace, and operated by the Stewardson Iron Company. Ventilation natural, but sufficient; drainage good. J. W. Snare, mining-boss.

Gosford Colliery.

Located on the A. V. R. R., and operated by the Gosford Coal Company. Ventilation natural; but good drainage. Works in good condition. W. W. Bosworth, mining-boss.

River View Colliery.

Located on A. V. R. R., and operated by the River View Coal and Mining Company. Works in fair condition. John L. Murray, mining-boss.

Riemerton Colliery.

Located on the A. V. R. R., and operated by the Franklin Coal Company. When I visited this colliery on the 1st of February, I found it in a wretched condition, and I made suggestions to the superintendent, J. I. Wagner, as to what would better the condition of his works; but from some cause the works were stopped, and have not been operated since.

Red Bank Colliery, Nos. 1 and 2.

Located on the low-grade division of the A. V. R. R. The miners at these works struck in September, 1883, and they have not resumed operations.

Oak Ridge Colliery.

Located on the low-grade division of the A. V. R. R. This colliery is in a good condition. Ventilation by furnace, which is ample for all purposes. Henry Williams, mining-boss.

CAMBRIA COUNTY.

Rolling Mill Mine,

Located at Johnstown, and operated by the Cambria Iron Company. This colliery is in first-class condition. Ventilation by fan 8′ diameter, and gives about 37,000 cubic feet per minute. John Nelson, mining-boss.

Coshon Colliery,

Located at Johnstown, and operated by the Cambria Iron Company. Mine in good condition. Thomas Fulton, mining-boss.

Conemaugh Colliery,

Located at Conemaugh, and operated by the Cambria Iron Company. Mines in good condition. Drawing pillars is about all they have to do in this mine. Frank Spotts, mining-boss.

Getuir Mine,

Located at Johnstown, and operated by the Cambria Iron Company. Works in reasonable condition. Thomas H. Caddy, mining-boss.

Cambria Mine,

Located at Johnstown, and operated by the Cambria Iron Company. Works in good order, both as to ventilation and drainage. Josiah Evans, mining-boss.

Mineral Point Colliery,

Located at Mineral Point, Pennsylvania railroad. Has not been in operation during the year.

Argyle Colliery,

Located at South Fork, and operated by Huff & Coulter. Ventilation is by furnace and is excellent; drainage is also good, and the law generally observed. John Pratt, mining-boss.

Aurora Colliery,

Located at South Fork, and operated by Luke & Heist. This colliery is comparatively new, and, owing to dullness in trade, has not done much this year. D. W. Luke, superintendent.

Euclid Colliery,

Located at South Fork, and operated by the Euclid Coal Company. Ventilation is poor, but the drainage is good. Frederick Croyle, mining-boss.

Stineman Colliery,

Located at South Fork, and operated by J. C. Stineman. Ventilation has been poor at the colliery. They are now commencing to put up a furnace, which will remedy this defect in the future. William M. Watkins, mining-boss.

South Fork Colliery,

Located at South Fork, and operated by G. B. Stineman. There has been great difficulty at this colliery on account of the coal dipping continuously before them; they are now erecting machinery to control the water and do the hauling. G. B. Stineman, superintendent.

Webster, No. 3,

Located on the old Portage road, near Summerhill, and operated by John Scott & Sons. This is a new colliery, and has good prospects; it is beginning right with the introduction of a double-entry and furnace. I think they will have a good colliery. Philip Hartman, superintendent.

Diamond Colliery,

Located near Summerhill, has been idle all the year.

Martindale Collieries,

Located at Portage, and operated by J. C. Martin & Co. No. 1 has been

in operation all the year, and is in good condition. No. 2 is a new mine, and has been opened about four months. There is also a new slope opening at this colliery, which will materially increase the production at this place during the ensuing year. J. C. Martin, superintendent.

Standard Colliery,

Located at Portage, has one opening working in good condition, and the company is opening another 7×8 area. David F. Jones, mining-boss.

Drysart Colliery,

Located at Ben's creek. No. 1 is in good condition. Ventilation natural; 8,000 cubic feet were being discharged when visited. No. 2 is a smaller colliery, and is in reasonable condition. Thomas Leahy, superintendent.

Mentzer's Ben's Creek,

Located at Ben's creek, and operated by E. W. Mentzer. Ventilation poor, and drainage fair. John Leap, mining-boss.

Smith's Ben's Creek,

Located at Ben's creek, and operated by S. H. Smith. This is but a narrow strip, and will soon be worked out. Ventilation poor. Martin Leap, mining-boss.

Sonman Colliery, No. 1,

Located at Ben's creek, and operated by W. H. Piper & Co. This colliery has improved greatly during the year. Ventilation and drainage are now fair. The same may be said of Sonman, No. 2, located about one mile from Lilly, and operated by the same parties. Ventilation is by furnace, and is reasonable. John Leahy is superintendent.

Standard Colliery

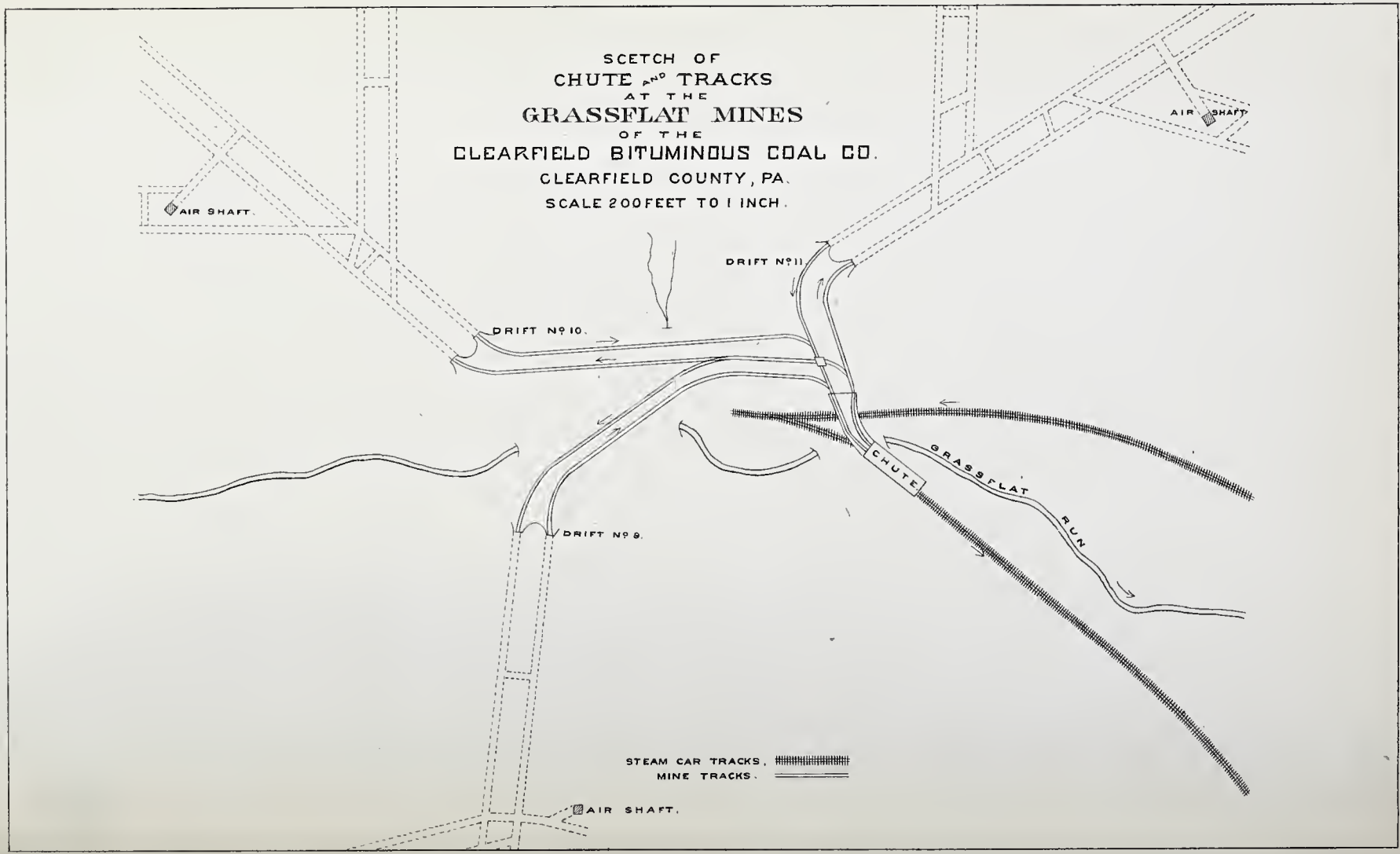
Is located about one mile from Lilly, and is operated by C. H. Hughes. This mine has also improved lately, and is in fair condition. Edward Edwards, mining-boss.

Leahy Colliery,

Located near Lilly, and operated by Carron Leahy. This is a small colliery, sometimes employing 12 or 14 men. It is in a fair condition. Carron Leahy, superintendent.

Griffith Colliery,

Located at Johnstown. This is a small colliery, employing about 20 men. Ventilation was poor when visited. They have put down a new shaft and erected a furnace. They will succeed better. John Griffiths, superintendent.


SCETCH OF
CHUTE AND TRACKS
AT THE
GRASSFLAT MINES
OF THE
CLEARFIELD BITUMINOUS COAL CO.
CLEARFIELD COUNTY, PA.
SCALE 200 FEET TO 1 INCH.
AIR SHAFT.
AIR SHAFT.
DRIFT No 11.
DRIFT No 10.
DRIFT No 9.
CHUTE
GRASSFLAT RUN
STEAM CAR TRACKS.
MINE TRACKS.
AIR SHAFT.

Galitzin Shaft,

Located near Galitzin, and operated by Taylor & McCoy. This colliery is now in good condition. After much strife, they have succeeded in putting in a second opening. It is surprising how some people will resist the plain teachings of the law, regardless of consequences, and not only endanger men's lives, but expose their own and employers' property to danger. William Rodda, mining-boss.

Munroe Slope,

Located near Galitzin, and operated by Galitzin Coal and Coke Company. This is a new colliery, and came into operation two months ago. The slope is sunk about 400 feet, on a 23° grade, 12×6, well timbered and secured; tipple arrangements all complete for loading either screened or mixed coal, with coupled engines of 120-horse power, three boilers, and fifty coke-ovens. They have commenced to make the second opening, which will be a drift out to a valley, 300 yards distant, and when completed will be ventilated by fan. Altogether, this is the finest plant in Cambria county. T. Munroe is superintendent, and James Smith, mining-boss.

Delaney Colliery,

Is located about two miles from Kittanning Point, on the Pennsylvania railroad, and is also a new opening, being a slope, driven out through the mountain. Ventilation natural, and ample for present purposes. This is also a good plant. They have two engines of 70-horse power each, three boilers, and substantial tipple. Andrew Patrick, superintendent.

Great Bend Colliery,

Located near Great Bend, on Bell's Gap railroad, and operated by Great Bend Coal Company. Works in reasonable condition; ventilation by furnace. John Cann, mining-boss.

Eldorado Colliery,

Located near Mountaindale, Bell's Gap railroad; operated by E. J. Palmer & Co. Works in poor condition; ventilation natural. I am advised that it has been improved since I visited it in August. E. J. Palmer, superintendent.

EXAMINATIONS OF CLEARFIELD COUNTY.

Derby Colliery,

Located on Campbell branch of the Tyrone and Clearfield railroad, and operated by Thomas Barnes & Bros. Colliery in good condition; ventilation natural; drainage good. Richard Ashcroft, mining-boss.

Springhill Colliery,

Located on the Campbell branch of the Tyrone and Clearfield railroad, and

operated by the Leonard Coal Company. This colliery has not been operated much this year.

Colorado Colliery,

Located on Campbell branch of the Tyrone and Clearfield railroad, and operated by Hoyt & Jackman. Works in good condition. Superintendent, Thomas Pilkington.

Glenwood Colliery,

Located on the Campbell branch of the Tyrone and Clearfield railroad, and operated by Huff & Co. Colliery in good condition. A second opening has been made during the year which will put the works in a better condition, both as to ventilation and drainage. R. C. Colburn, mining-boss.

Victor Colliery, No. 1,

Located on the Campbell branch of the Tyrone and Clearfield railroad, and operated by Griffiths, Neil & Co. This colliery has done very little during the year. John Walton, superintendent.

Lancashire, No. 1,

Located on the Campbell branch of the Tyrone and Clearfield railroad, and operated by Thomas Barnes & Bro. Ventilation and drainage good. Richard Ashcroft, mining-boss.

Cody Ridge Colliery,

Located on the Campbell branch of the Tyrone and Clearfield railroad. Small colliery; operated by H. R. Grant. Stephen Sheldon, superintendent.

Reading Colliery,

Located on Mapleton branch, and operated by Livright & Co. Small works, but in good condition. Henry Livright, superintendent.

Logan Colliery,

Located on Mapleton branch. Works in good condition, having just finished a second opening, which will serve both for ventilation and drainage. William Fitzgerald, mining-boss.

Laurel Run, No. 1, Colliery,

Located on the Mapleton branch, and operated by Nuttal & Co. Ventilation is by furnace, and is good.

Laurel Run, No. 2,

Is a new colliery, and is likely to commence operations this year. John Hawkens, mining-boss.

Columbia Collieries, Nos. 1 and 2,

Located on Mapleton branch, and operated by J. L. Mitchell & Co. Both mines are now in good condition, No. 1 having perfected the second opening, thereby relieving the ventilation by making a proper inlet. J. L. Mitchell, superintendent.

Mapleton Colliery,

Located on Mapleton branch, and operated by Berwind, White & Co. This is an old colliery. Engaged in drawing pillars. Ventilation and drainage good. John Allan, mining-boss.

Ashland Colliery,

Located on Coal run, and operated by J. P. Colihan. This mine was in poor condition when visited; apparently opened in the wrong place, which had been done before the present management came into power, and it will be some time before it will be in good working condition. J. P. Colihan, superintendent.

Moshannon Colliery,

Located on the Moshannon branch, and operated by the Moshannon Coal Company. Colliery in good condition. C. J. Paul, mining-boss.

Eureka, No. 3, Colliery,

Located on Moshannon branch, and operated by Berwind, White & Co., works in reasonable condition. John Allan, mining-boss.

Elizabeth, formerly Mount Vernon Colliery,

Located in Brisbin, and operated by Elizabeth Coal Company. The works are in good condition; the tipple and buildings were burned down last May, in the conflagration that swept away the town of Brisbin; tipple, &c., are now rebuilt and in operation again. John Maurice, mining-boss.

Goss Run Colliery,

Located on Goss Run, and operated by Berwind, White & Co., all finished except to draw pillars. James Blades, mining-boss.

Webster, No. 2, Colliery,

Located on Goss Run, and is operated by the Webster Coal Company. This colliery is in reasonable condition, ventilation by furnace and ample; drainage good. Isodore Simendinger, mining-boss.

Excelsior, Nos. 1, 2, and 3.

Excelsior, No. 1, is an old colliery located on Goss Run, and operated by Fisher, Miller & Co., and has commenced to draw back the pillars. No. 2 is a new opening located on the extension of the Coal Run branch; ventila-

tion will be by furnace. The opening is large and commodious, being 7′×8′. No. 3 is a slope located on the extension of the Moshanon branch. Size of opening, 7′ × 12′. Thomas Richards, superintendent.

Ocean, No. 1, Colliery,

Located on Goss Run, and operated by Whitehead & Co. This colliery is worked entirely on the double-entry system, enabling the air to be carried to the head of the workings at all times. Andrew G. Spears, superintendent.

Victor, Nos. 2 and 2, Collieries,

Located on Crowley Run, and operated by Victor Coal Company. Both mines are in good condition. John Walton, superintendent.

Atalanta Collieries,

Located on Crowley Run, and operated by Atalanta Coal Company. Nos. 1 and 2 have not done much during the year. No. 3 is a new opening and is commencing to run coal. Ventilation to be by furnace.

Keystone Colliery,

Located on Crowley Run, and operated by J. A. Lossee. This colliery was in good condition when visited. It has not done much this year. J. A. Lossee, superintendent.

Logan Ridge Colliery,

Located on Crowley Run, and operated by H. J. Smith. This colliery was in very poor condition when visited in June. Since that time, they have built a furnace and the condition is much improved. James Leonard, superintendent.

Pacific, Nos. 1 and 2,

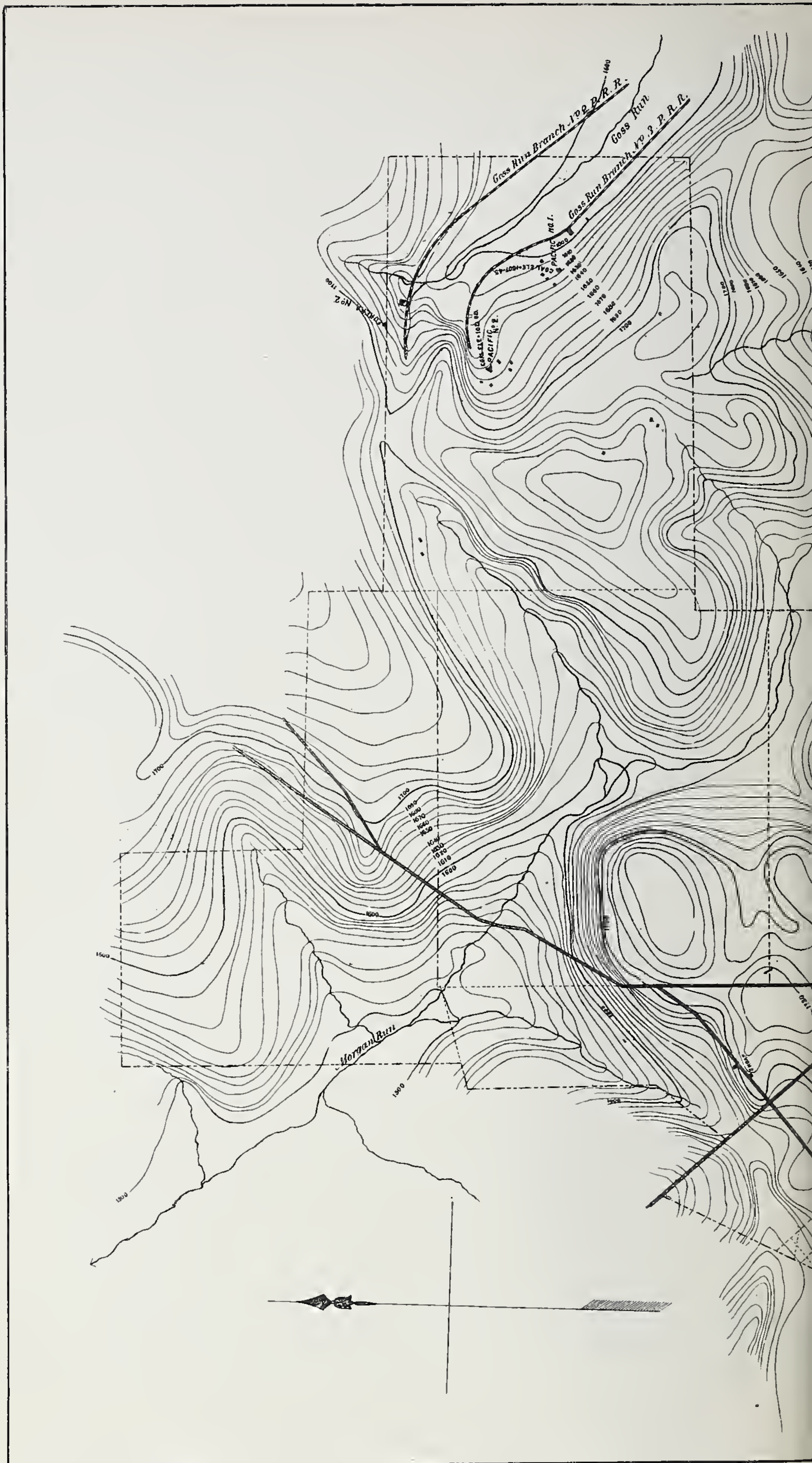
Located near Brisbin, and operated by Whitehead & Co. Both collieries are in good condition. Ventilation in both by furnace, and is sufficient. Drainage good. John Lloyd, mining-boss.

Penn Colliery

Has two openings, one located at Houtzdale, and the other near Brisbin. No. 2, near Brisbin, is a new opening, and will be ventilated by furnace. The operators are Reichart Bros. George Gould, mining-boss.

West Moshannon Colliery,

Located near Houtzdale, and operated by Moshannon Coal Company. Ventilation was poor when visited in July; they have remodeled their furnace since that time, and their ventilation is much improved. A. P. Isenberg, mining-boss.



Goss Run Branch No 2 P.R.R.
Goss Run
Goss Run Branch No 3 P.R.R.
PACIFIC No 1
PACIFIC No 2
No 2
1700
1600
1500
Morgan Run

Map
of
Whitehead & Co's.
Coal Properties
near
Houtzdale
Clearfield County
Penna.

Geo. L. Miller
Engineer.

January 12th 1884.

Atlantic Colliery,

Located near Ramey, and operated by Whitehead & Co. Colliery in good condition. Robert Whitehead, mining-boss.

Leonard Colliery,

Located on the Campbell branch of the Tyrone and Clearfield railroad, and operated by the Leonard Coal Company. Works very indifferent. John Langdon, superintendent.

Empire Colliery,

Located on Hawk's Run, and operated by the Empire Coal Company. Colliery in good condition. Ventilation by furnace, and sufficient for all purposes. Evan Evans, mining-boss.

Pardee Colliery,

Located on Hawk's Run, and operated by Duncan, Lingley & Co. This colliery is hemmed in by a large fault which will keep it from extending till it is removed. W. C. Lingley, superintendent.

Coaldale, No. 3, (formerly Allport,)

Located on Hawk's Run, and operated by Holt, Chipman & Co. This colliery has had much difficulty with two large faults which they have succeeded in getting through, and when visited in the month of June, they were getting to work again in good order. W. H. Blackburn, mining-boss.

Hawk's Run Colliery,

Located on Hawk's Run, and operated by Jones, Mull & Co. This is a small colliery, sometimes employing the requisite number of men and as often not. Benjamin Jones, superintendent.

Morrisdale Colliery,

Located at Morrisdale, and operated by R. B. Wigton & Sons. This is the largest colliery in this district at present. There are six mines here, and when all are in operation produce a large amount of coal. Ventilation is by furnace and is ample, and drainage is fair. William McCann, mining-boss.

Decatur Colliery,

Located near Morrisdale, and operated by Decatur Coal Company. Colliery in first-class condition. John Todd, mining-boss.

Ocean, No. 2, Shaft.

On first visit, they had not made the second opening, which has since been made by connection with Atalanta colliery. The works are now in a fair condition. Robert Whitehead, mining-boss.

Vulcan Colliery,

Located on the extension of the Moshannon branch, and operated by R. B. Wigton & Sons. This is a new colliery, and proves that the Moshannon basin is continuing westward, and retaining its quality. Substantial buildings have been erected and every preparation made for an extensive business. John T. Jones, mining-boss.

Webster, No. 2, Colliery,

Located near Houtzdale, and operated by the Houtzdale Coal Company, Limited. When visited in June, the ventilation was poor, but they have since built a small furnace, which has improved the current. Drainage was good. The coal dips here below the level of the creeks, causing 300 feet of a slope. James Minds, mining-boss.

Franklin Colliery

Has two openings, Nos. 1 and 2; it is located in Houtzdale, and operated by the Kittanning Coal Company. The two openings are worked in the same connection, and are in good condition. E. A. Foster, mining-boss.

Eureka, No. 2,

Located near Brisbin, and operated by Berwind, White & Co. This col liery is in good condition. Ventilation by furnace, and the drainage good. Peter Cameron, junior, mining-boss.

Eureka, Nos. 4 and 5, Collieries,

Located on Whiteside run, and operated by Berwind, White & Co. No. 4 is a drift, and is in reasonable condition. No. 5 is a slope, and has not yet reached the bottom of the basin to which it is being driven. Ventilation is by furnace, and is sufficient. Drainage is by a 12-inch Cameron pump, and it has all it can do, and the possibilities are that they will have to put in another pump. William Pollock, mining-boss.

Harrison Colliery,

Located at Houtzdale, and operated by Daniel Lang. Small colliery and in poor condition. Thomas Benson, mining-boss.

Williamsport Colliery,

Located at Tyler, and operated by the Clearfield Coal Company. Colliery in good condition. E. J. Copeland, mining-boss.

Rochester Colliery,

Located near Du Bois, and operated by Bell, Lewis & Yates. This is the largest colliery in this district, with a capacity of two thousand tons per day. It is worked on the double-entry system. Ventilated by 6′ fan. Drainage good. It has undergone great improvements since I first

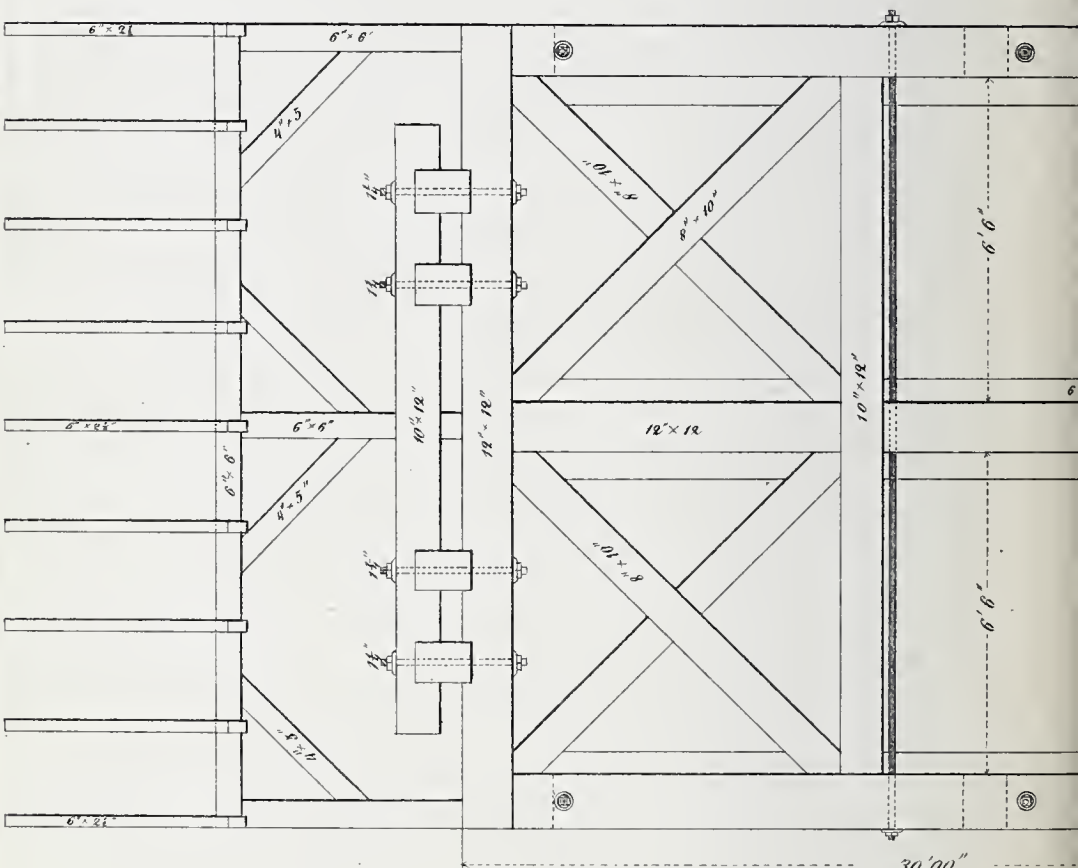
DERRICK F

WHITEHEAD

COLLIE

Scale $\frac{1}{4}$" = 1-Foot.

1 – 4 – 1884

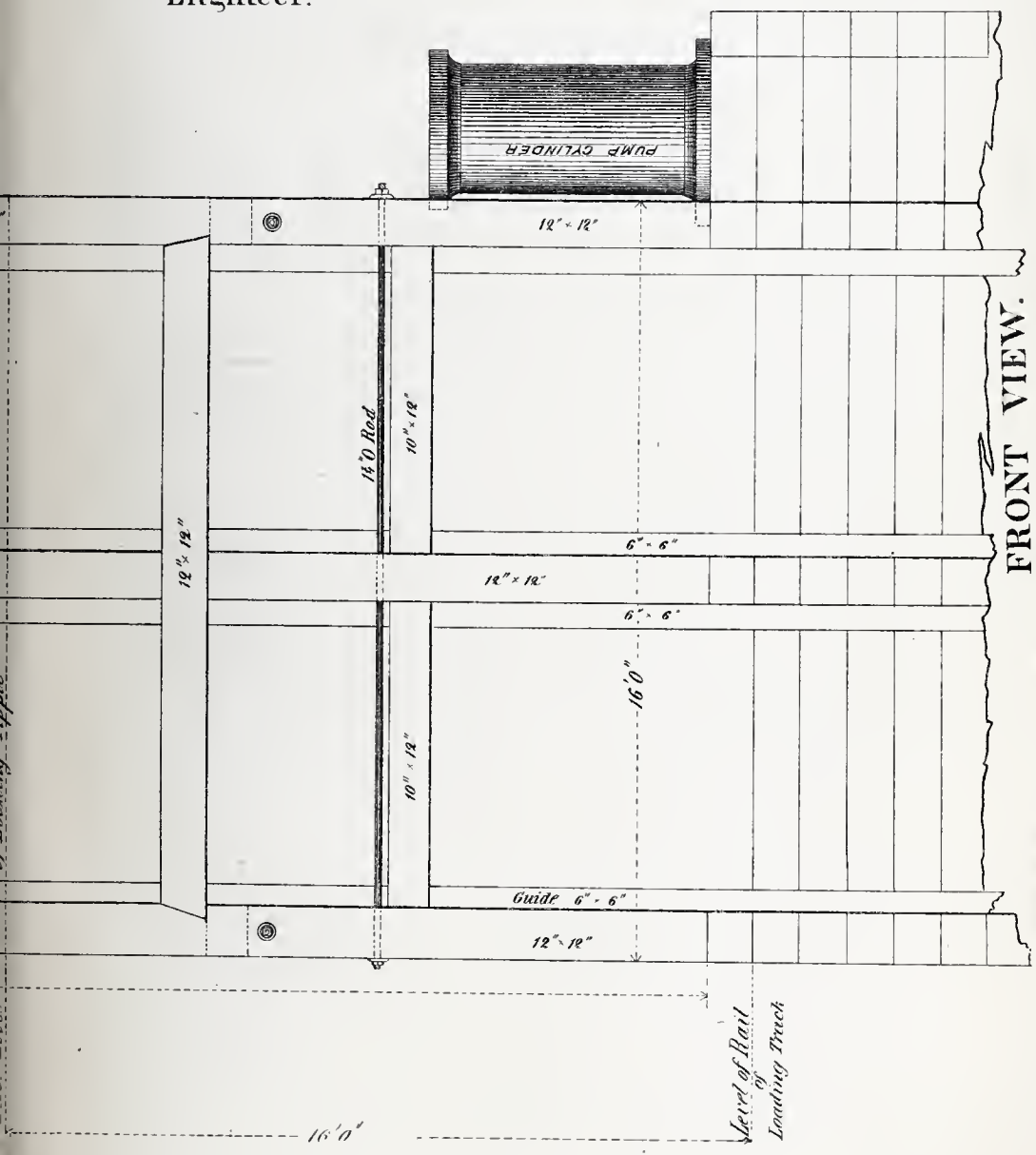


SHAFT

CO'S.

S

eo. L. Miller,
Engineer.



visited it, September, 1883, which must be credited to its present management. M. J. Kelley, mining-boss; W. Bolan, assistant.

Dixon Colliery,

Located on Falls Creek, and operated by Falls Creek Coal Company. Colliery in good condition. Ventilation by furnace. Drainage good. J. B. Williams, mining-boss.

Irvona Colliery,

Located near Coalport, and operated by the Irvona Coal Company. This colliery has improved much within the year. It is now ventilated by furnace, and is in a reasonable condition. John McNulty, mining-boss.

Blaine Run Colliery,

Located near Coalport, and operated by the Blaine Run Coal Company. Works were in good condition when visited, and the company were driving a second opening, which was intended to serve both as water and air course. William Williams, mining-boss.

Spartan Colliery,

Located near Coalport, and operated by Samuel Degarty. This colliery was in poor condition when I visited it in June. They promised to put up a furnace, which I am informed they are preparing to do. William Wright, mining-boss.

Schuylkill Colliery,

Located near Coalport, and operated by Bryson & Richards. It has been idle since January.

Eldorado Colliery,

Located near Mountain Dale, on the Bell's Gap railroad, and operated by J. E. Palmer & Co. Ventilation poor. They promised to put up a furnace, and I learn they have done some work with that end in view. J. E. Palmer, superintendent.

Great Bend Colliery,

Located on Bell's Gap railroad, and operated by Great Bend Coal Co. Colliery ventilated by furnace and is in reasonable condition. John Cann, mining-boss.

Sterling Collieries, Nos. 1 and 2,

Located near Houtzdale. Both collieries are ventilated by furnace. At No. 1, a locomotive runs into the mine a considerable distance, and has a separate ventilating system for itself, which works well. Both collieries are in good condition.

DESCRIPTIVE LIST OF ACCIDENTS.

No. 1.—November 1, 1883, at Cushon mine, John Owens was fatally injured by a fall of bone coal, thoughtlessly leaving said bone coal without securing it.

No. 2.—November 15, 1883, at Sterling, No. 2, John Dougherty, aged fifteen years, had his thigh broken; he and his father were working together, when, from some unseen cause, a quantity of coal fell on him with the above result.

No. 3.—November 21, 1883, at Rolling-Mill mine, Frank Dayly had his ankle and hip bruised from a fall of coal and bone coal, which was supposed to be safe.

No. 4.—November 30, 1883, at Rochester mine, M. Moore had his leg severely bruised by a mine car.

No. 5.—December 18, 1883, at Rochester mine, Thomas McCoy had his leg broken by fall of slate while undermining his place.

No. 6.—December 22, 1883, at Franklin mine, Thomas Ewing was fatally injured from a fall of coal. He and his neighbor workman not observing that the top coal in their place was loose, it suddenly gave way, injuring him so that he died two days afterwards.

No. 7.—January 2, 1884, at Sterling, No. 1, William Loughery, aged twenty-five years, had his collar-bone broken by fall of coal.

No. 8.—January 5, 1884, at Hildrup colliery, Robert Munroe had his leg broken while bringing a wagon out of a room.

No. 9.—January 26, at Goss Run colliery, George Dubrick, married, age unknown, orphans two, was killed instantly while trying to mine his place further than he had left it the night before. The coal, that stood all night undermined, fell on him with the above result.

No. 10.—February 1, at Galitzin shaft, Thomas Carroll, a driver, had his leg broken between ankle and knee in attaching the mule to the wagon; the spreaders caught on the center rail of the parting, throwing the mule down, and, falling on him, broke his leg.

No. 11.—February 6, at Rochester mine, James McHugh, junior, aged thirteen, leg broken by fall of coal.

No. 12.—February 12, J. Craggs, aged forty-three, severely hurt, and William Cox, leg hurt, all by same fall of coal.

No. 13.—February 7, at Lancashire mine, Matthew Simpson; arms and legs bruised by fall of coal.

No. 14.—February 21, at Rolling-Mill mine, Josiah B. Miles, aged thirty-five, was killed, and John O'Neil and Anthony Piola were hurt, all with the same fall of slate. They had been employed as night roadsmen, and were engaged at the time of accident in shooting and taking down roof that was thought to be getting dangerous. They had fired one shot, and had taken down all that was thought to be loose. The very stone that fell had been examined, and they were about to put another shot quite close to it, when it suddenly fell with the above results. A copy of the coroner's inquest is herewith sent.

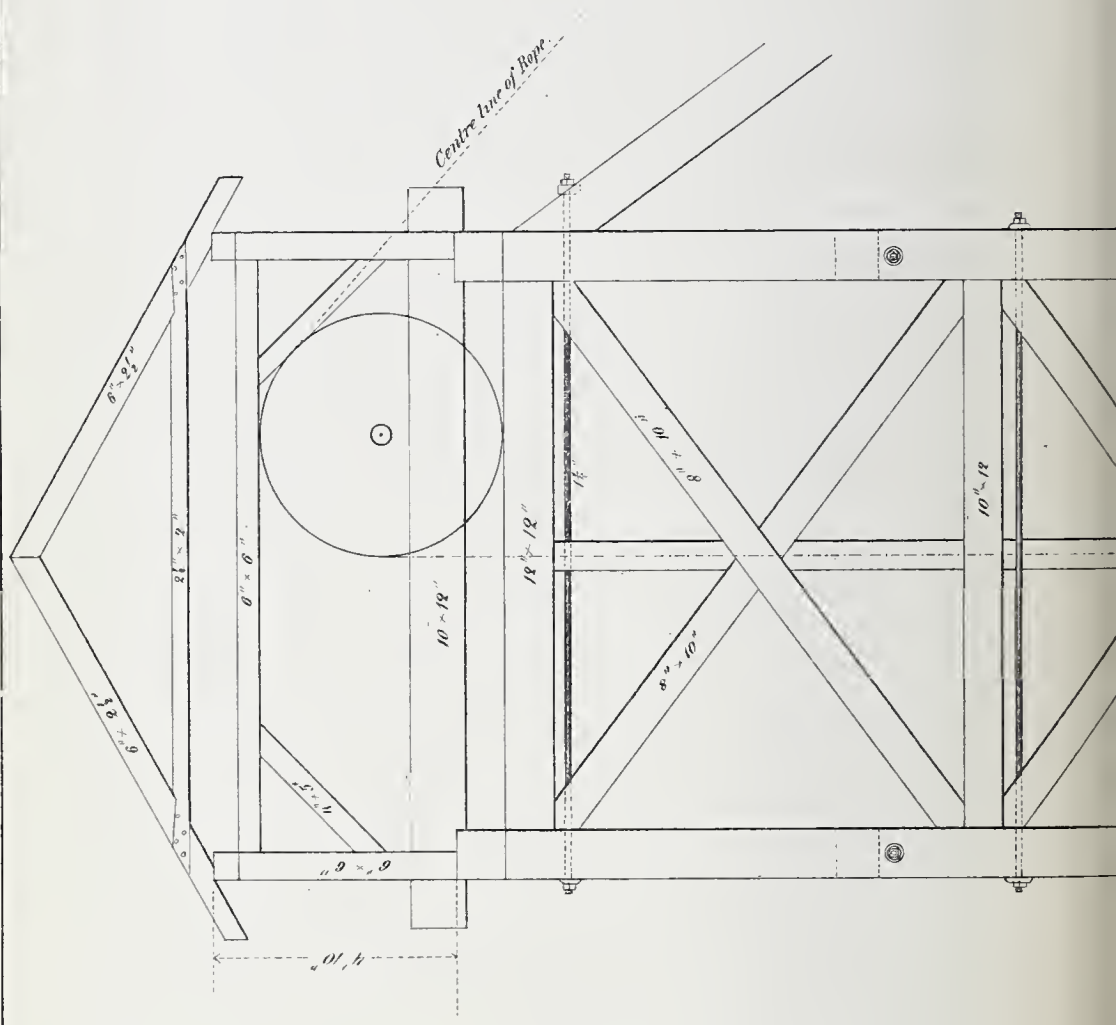
DERRICK F

WHITEHEAD

COLLIE

Scale $\frac{1}{4}$" = 1-Foot.

1-4-1884

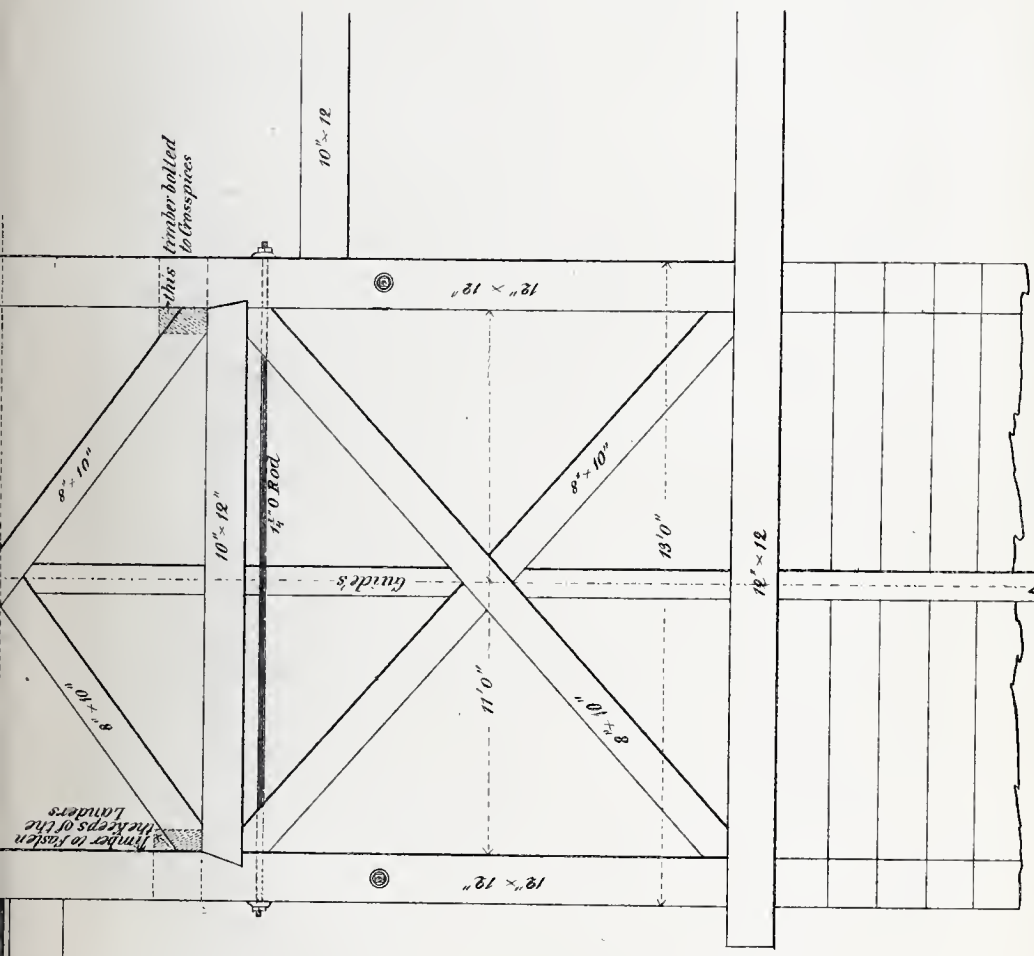


R SHAFT

ND CO'S.

IES

Geo. L. Miller,
Engineer.



No. 15.—February 21, at Sterling No. 1, J. J. Stoker, aged twenty, single; leg broken by fall of coal.

No. 16.—March 13, at Delancy colliery, Peter Erle, aged forty, married, was killed, leaving three orphans, by being caught between loaded wagons while trying to get on top of said wagons and ride out on them. A copy of coroner's inquest is herewith sent.

No. 17.—March 10, at Franklin, No. 1 mine, John Baptist Clare, aged fourteen, was killed by fall of coal. He was working with others and they had fired a shot in the coal, and the coal not coming down immediately, he went partly under the loose coal to remove some slack that was thought to be keeping it from falling, when the whole mass gave away, killing him instantly.

No. 18.—March 6, at Sterling, No. 2, Henry Roach, lost one of his arms by falling off a trip of mine cars, and the engine running over his arm, cut it off.

No. 19.—March 24, at Rolling-Mill mine, Morris Finn, aged fifty; John Finn, aged seventeen; Thomas Martin, aged forty-eight, and Patrick Sharkey, were burned. John Finn severely about face and hands, the rest slightly. A quantity of gas had accumulated in one of the headings between Saturday night and Monday morning. The fan being started early on Monday morning, naturally moved this accumulation of gas from the face of heading, and these men, happening to go to work somewhat earlier than the usual time, met this explosive atmosphere a considerable distance from the face of the workings, when it fired on them. A fire-boss has been put on since then, whose duty is to examine all working-places before any one is allowed to enter.

No. 20.—April 7, at Sonman, No. 1, Thomas McFadden had his head and face cut by fall of coal.

No. 21.—April 25, at Eureka, No. 2, Michael Joseph was hurt by being caught between mine cars on tipple.

No. 22.—April 18, at Eureka, No. 5, Edward Ingot, slightly hurt by fall of coal.

No. 23.—April 27, at Keystone mine, Matthew Thoma, fatally injured by being caught between a full wagon and a post.

No. 24.—April 28, at Eureka, No. 2, John Radcliff was killed by fall of slate. He was engaged drawing pillars and had fired a shot in the coal, the shot forcing a fracture in the slate overhead; he going to load his wagon, the slate fell, killing him. A copy of the coroner's inquest is herewith sent.

No. 25.—April 28, at Empire mine, James Nixon had his leg broken by fall of coal.

No. 26.—May 5, at Empire mine, Alexander Watkins, body bruised by fall of coal.

No. 27.—May 5, at Eureka, No. 4, William Martin had his leg broken. He was taking down some loose top coal, when it turned over on him, breaking his leg.

No. 28.—May 14, at Sterling, No. 1, Thomas Tobin had his leg broken by fall of coal.

No. 29.—May 17, at Sterling, No. 1, John Munroe, bruised and back hurt by fall of coal.

No. 30.—May 24, at Webster, No. 1, Mike Gibbons, small bone in leg broken by fall of coal.

No. 31.—May 31, at Victor, No. 3, Gustave Taylor had his shoulder dislocated by fall of coal.

No. 32.—May 7, at Webster, No. 2, Thomas West was hurt, and George West was killed. The brothers were drawing pillars, and had left a large piece of bone coal on the roof the evening before the accident. George went under this hanging bone coal to do some mining, apparently without proper examination; he had not done much, when it fell with the above result. A copy of the inquest is herewith sent.

No. 33.—June 12, at Stewardson mine, J. H. Keller was severely hurt by fall of slate.

No. 34.—June 27, at Excelsior colliery, Henry Lendenberger was killed while undermining his place. There were from twelve to fifteen feet of the room undermined about four feet deep. It had two sets of props or sprags under it to keep it from falling; one of these sprags was about five feet from deceased; he was lying under it, squaring the rib, when suddenly, and without warning, the whole mass fell or settled down, and, breaking over the sprag next to him, fell on him, killing him instantly.

No. 35.—July 25, at Sonman, No. 1, John Bender was hurt in back from fall of slate.

No. 36.—July 28, at Griffiths, Johnstown, Evan B. Evans was seriously hurt on head by a stone falling from bucket while sinking air shaft; he is now convalescent.

No. 37.—July 29, at Standard colliery, Patrick Bradley; slight fracture of leg from a fall of bone coal of the rib near which he was working.

No. 38.—August 5, at Oak Ridge colliery, John Bouser; fracture of thigh, caused by a fall off horseback from roof.

No. 39.—August 19, at Rolling-Mill mine, David Shenan and Patrick McClece were slightly burned and injured from firing a shot.

No. 40.—August 25, at Rochester mine, John Egan was fatally injured. He had fired a shot, and it had left the top coal standing, which was open at both ends, and, without securing this top coal in any way, he went under it and began wedging a piece of loose coal that the shot had left on the face. The pounding of the sledge would shake this top coal and incline it to fall, which it did, with the result as noted.

No. 41.—August 27, at Rochester mine, Joseph Goodyear; back bruised by fall of fire-clay.

No. 42.—August 5, at Sterling, No. 1, Richard McHenry; arm broken by fall of coal.

No. 43.—August 29, at Sterling, No. 1, Orlando Johnson; hurt by fall of coal.

MINE CAR.
CO'S.

No. 44.—August 16, at Webster, No. 3, Jacob Helsel; leg broken by fall of coal.

No. 45.—September 12, at Pacific, No. 1, William Prince; fatally injured by fall of coal.

No. 46.—September 11, at Mapleton, Robert McGinty; shoulder dislocated and jaw broken by fall of coal.

No. 47.—September 20, at Eureka, No. 2, John Ferguson was killed by fall of coal. He had tried the evening before to take down the coal he had mined, but could not do it, and next morning went under it to mine it further, when it fell on him, killing him instantly.

No. 48.—At Eureka, No. 4, September —, J. W. Bates had a small bone in his leg broken by fall of coal.

No. 49.—At Logan mines, October 23, Arthur Campbell was fatally injured by fall of coal, dying three days afterward. He was undermining a part of his room at the time of the accident, when a piece of coal, about forty pounds' weight, being loose, gave way and fell on him with the above result.

No. 50.—At Franklin colliery, October 29, Mike Groose was instantly killed by a fall of coal. He was undermining at the time of the accident, and, although he had the face of his room apparently well secured from falling, it nevertheless fell, breaking over two supports, killing him instantly.

No. 51.—At Eureka, No. 5, October 10, Alex. Montooth had a small bone in his leg broken by fall of coal.

COMMONWEALTH OF PENNSYLVANIA, *County of Clearfield*, } *ss:*

An inquisition indented and taken at Du Bois, in the county of Clearfield, the 26th day of August, A. D., before me, J. S. Kane, coroner of the county aforesaid, upon the view of the body of John Egan, then and there lying dead, upon the oaths of J. B. Martin, G. W. Woodring, J. W. Lytle, O. A. Lightgo, and solemn affirmations of W. L. Johnson and Isaac Hendricks, good and lawful men of the county aforesaid, who, being sworn and affirmed to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said John Egan came to his death, do say, upon their oaths and affirmations, that the said John Egan came to his death by accident in not using proper precaution in going under loose top coal which fell upon him while working in the mines of Bell, Lewis & Yates; and further, that no blame is attached to Bell, Lewis & Yates.

J. S. KANE, *Coroner*, [SEAL.]
J. B. MARTIN, [SEAL.]
J. W. LYTLE, [SEAL.]
G. WOODRING, [SEAL.]
ISAAC HENDRICKS, [SEAL.]
O. A. LIGHTGO, [SEAL.]
W. L. JOHNSON, [SEAL.]

COMMONWEALTH OF PENNSYLVANIA, } ss:
County of Clearfield, }

An inquisition taken at Excelsior mines, 28th of June, in the year of our Lord one thousand eight hundred and eighty-four, before John M. Watt, inspector of mines for county of Clearfield, upon view of the body of Henry Lendenberg, then and there lying dead, and upon the oaths, respectively, of John Whitney, Joseph Rees, Daniel Hopkins, Samuel Heist, William Hill, and John Richards, six good and lawful men of said county, charged to inquire, on the part of the Commonwealth of Pennsylvania, when, how, and by what means the said Henry Lendenberg came to his death, do, upon their solemn oaths, respectively, say, that it appears from the evidence that his death was caused by a fall of coal at his working-place; that it was purely accidental, and that no blame can be attached to any one.

In witness whereof, as well as said inspector, the said jurors have to this inquisition set their hands and seals, the day and year, and place first mentioned.

(Signed) JOHN M. WATT, *Inspector*, [SEAL.]
JOHN C. WHITNEY. [SEAL.]
SAMUEL HEIST. [SEAL.]
DANIEL S. HOPKINS, [SEAL.]
JOHN RICHARDS, [SEAL.]
WILLIAM HILL, [SEAL.]
JOE REESE, [SEAL.]

Extract from inquisition held on body of George West, who was killed in Webster, No. 2, colliery on 7th day of May, 1884.

VERDICT OF CORONER'S JURY.

That the said George West, while at his usual occupation of mining coal at Webster, No. 2, colliery, in Woodward township, county of Clearfield aforesaid, was accidentally caught under a large lump of "bony" and other coal, weighing about 500 pounds, and then and there instantly died. That the said George West casually, accidentally, and by the means aforesaid and not otherwise, came to his death. And so the said jurors do say.

And the said jurors do further say that no blame is attached to the owner, operator, or manager of said mine. In witness whereof, the said *ex-officio* coroner, as well as the jurors aforesaid, have to this inquisition put their hands and seals on the day, and year, and at the place first above mentioned.

(Signed,) JOHN B. McGRATH, [SEAL.]
J. P., and ex-officio Coroner.
ELEASON EVANS, *Foreman*, [SEAL.]
JOHN HOWINSON, [SEAL.]
THOMAS W. NICHOLSON, [SEAL.]
JOHN McCAULY, [SEAL.]
EDWARD TODD, [SEAL.]
JAMES SMITH, *Jurors*, [SEAL.]

Clearfield County, ss:

I, John B. McGrath, justice of the peace in and for said county, and *ex-officio* coroner, do hereby certify that the foregoing is a correct copy of verdict of coroner's jury in above inquisition, taken before me the 7th day of May, 1884.

Witness my hand and seal, this 28th day of May, 1884, at Houtzdale, Pa.

JOHN B. MCGRATH, [SEAL.]
J. P., and ex-officio Coroner.

COMMONWEALTH OF PENNSYLVANIA, }
County of Clearfield, } ss:

An inquisition, indented and taken at the Eureka Colliery, No. 2, in the county aforesaid, on the 28th day of April, 1884, before me, D. H. Thomas, a justice of the peace in and for said county, upon the view of the body of John Radcliffe, there lying dead, upon the solemn affirmations of John Truman, Matthew Watson, Joseph R. Phillips, Alfred Williams, David L. Davies, and Robert Tibbins, good and lawful men of the county aforesaid, who, being duly sworn to inquire, on the part of the Commonwealth, when, where, how, and in what manner the said John Radcliffe came to his death, do say, upon their solemn affirmations, that John Radcliffe came to his death on the 28th day of April, about the hour of eight o'clock, A. M., by an unforeseen accident, being a fall of slate, dividing the lower and the upper seam of coal, and that in no way could an experienced eye even of an old miner, such as the unfortunate man was, detect any indication of a weakness therein, as the slate is usually from three to nine inches in thickness, and of a strong nature, and since the place where the accident occurred did not measure over nine feet wide, we deem it remarkable that the slate should thus break off, the stone itself being of the dimensions of about 5×7 feet, and running from three to five inches in thickness; that this stone fell on John Radcliffe, so crushing him that he died directly of suffocation.

In witness whereof, as well as the aforesaid justice of the peace, as the jurors aforesaid have to this inquisition put their hands and seals, and at the place above mentioned.

D. H. THOMAS, *J. P.*, [SEAL.]
JOHN TRUMAN, [SEAL.]
MATTHEW WATSON, [SEAL.]
JOSEPH R. PHILLIPS, [SEAL.]
ALFRED WILLIAMS, [SEAL.]
DAVID L. DAVIES, [SEAL.]
ROBERT TIPPINS, [SEAL.]

Alfred Alsope, being duly sworn, testified that he was a miner by occupation; and that he worked with John Radcliffe at the time the accident occurred; that John Radcliffe was at work before him that morning; and

that after his arrival the usual precautions as to ascertaining the safety of the place were taken; and that he considered the same perfectly safe; and that he, himself, narrowly escaped the same fate, as the stone in falling struck him on the head, but did no injury; that he was shoveling near John Radcliffe, and happened to be in the act of bringing the shovel to the car which they were, at the time, loading the moment the stone fell; and that he heard John Radcliffe, just then, say: "O! dear, O! dear," and seeing the situation, that he immediately ran to call John Alsope; that they both attempted to lift the stone, but failed, whereupon he again procured further help; and that when he was taken from under the stone he was dead.

John Alsope, being sworn, testified that he came to the place where John Radcliffe worked immediately on being called by Alfred Alsope; that they both attempted to lift the stone, but failed; and that while Alfred Alsope was away for more help he stooped to look under the stone, where he could see the unfortunate man so bent up that his head was between his knees; and that, during a period of what seemed to him about five minutes, he saw his body heaving as in heavy breathing, about twice; and that the last breath that he took was so difficult that in inhaling he saw his head lift a little, but on exhaling his head dropped lower than before, and limber as if lifeless; and that, a few minutes later, when taken out he was dead.

I do certify that the above is a true copy of the proceeding in the above case.

D. H. THOMAS,
Justice of the Peace.

BRISBIN, PA.

INQUISITION.

COMMONWEALTH OF PENNSYLVANIA, }
Clearfield county, } *ss:*

An inquisition indented and taken at Sterling, Clearfield county aforesaid, the eleventh day of March, in the year of our Lord one thousand eight hundred and eighty-four, before me, E. S. Davis, justice of the peace of the county aforesaid, upon the view of the body of John Baptist Clare, then and there lying dead, upon the oaths of James Campbell, George McQuillers, Thomas T. Jones, W. H. Buckwalter, William Fennel, and Frank Zimmerman, good and lawful men of the county aforesaid, who, being sworn to inquire on the part of the Commonwealth, when, where, how, and after what manner the said John Baptist Clare came to his death, do say upon their oaths, that it so happened that accidentally, casually, and by misfortune, he, the said John Baptist Clare, was working in the Franklin coal mine, and a fall of bone-coal fell on him, he, the said John Baptist Clare, then and there instantly died; and the jurors aforesaid do say that the said John Baptist Clare in manner aforesaid accidenta ly, casually, and by misfortune came to his death and not otherwise.

In witness whereof, as well the aforesaid justice of the peace as the ju-

rors aforesaid, have to this inquisition put their hands and seals on the day first above mentioned.

E. S. DAVIS,
Justice of the Peace.
JAMES CAMPBELL, [SEAL.]
GEORGE MCQUILLERS, [SEAL.]
THOMAS T. JONES, [SEAL.]
W. H. BUCKWALTER, [SEAL]
WILLIAM FENNEL, [SEAL.]
FRANK ZIMMERMAN, [SEAL]

COMMONWEALTH OF PENNSYLVANIA, } ss:
Blair county, }

An inquisition taken at Horse Shoe Mines, on the twenty-ninth day of March, in the year of our Lord one thousand eight hundred and eighty-four, before William H. Glenn, coroner for the county of Blair, upon view of the body of Peter Erle, then and there lying dead, and upon the oaths and affirmations, respectively, of George Lightle, Alphonso Donahoe, Luke Elder, John Giffins, William Kailer, and Otto Lower, six good and lawful men aforesaid, charged to inquire (on the part of the Commonwealth of Pennsylvania) when, how, and by what means the said Peter Erle came to his death, do, upon their solemn oaths and affirmations, respectively say, that it appears from the evidence before us that his death was purely accidental, and no blame attached to any one.

In witness whereof, as well the said coroner as the said jurors have to this inquisition set their hands and seals, the day and year and place first mentioned.

(Signed)
W. H. GLENN, *Coroner.*
GEORGE LIGHTLE, [SEAL.]
ALPHONSO DONAHOE, [SEAL.]
LUKE ELDER, [SEAL.]
JOHN GIFFINS, [SEAL.]
WILLIAM KAILER, [SEAL.]
OTTO LOWER, [SEAL.]
Jurors.

INQUISITION.

COMMONWEALTH OF PENNSYLVANIA, } ss:
County of Cambria, }

An inquisition indented and taken at Johnstown, in the county of Cambria, the 19th day of February, in the year of our Lord one thousand eight hundred and eighty-four, before me, John H. Fisher, one of the justices of the peace, and acting coroner for the county aforesaid, upon the view of the body of Josiah B. Miles, then and there lying dead, upon the oaths of

James P. McConaughy, John Frank, Sr., Charles Murr, and John D. Jones, and the solemn affirmations of John Harman and Josiah Waters, good and lawful men of the county aforesaid, who being sworn and affirmed to inquire on the part of the Commonwealth when, where, how, and after what manner the said Josiah B. Miles came to his death. After viewing the body, the said inquest adjourned to meet at the office of said justice on Thursday evening, February 21, 1884, at seven o'clock, to hear testimony; and now, February 21, 1884, the jury do say, on their oaths and affirmations, that said Josiah B. Miles did come to his death by being caught by a fall of slate from the roof of the gangway or tunnel of the Rolling-Mill coal mine of the Cambria Iron Company, in Yoder township, in said county, February 18, 1884, at quarter past seven o'clock, P. M. And the jury find from the evidence that no blame attaches to the foreman in charge of the men at the time, nor to any of the men, or to any of the employés of the said Cambria Iron Company, nor said company; and we do certify that we believe that the said inquest was necessary as provided for in section fourteen of the act of Assembly of this Commonwealth, approved the 18th day of April, 1877, entitled "An act providing the means for securing the health and safety of persons employed in the bituminous coal mines of Pennsylvania."

Witness our hands and seals this 21st day of February, A. D. 1884.

(Signed)

JOHN H. FISHER, *J. P.*, [SEAL.]
JAMES P. McCONAUGHY, [SEAL.]
JOHN HARMAN, [SEAL.]
JOSIAH WATERS, [SEAL.]
JOHN FRANK, [SEAL.]
CHARLES MURR, [SEAL.]
JOHN D. JONES, [SEAL.]

In the matter of inquest on the body of Josiah B. Miles, a laborer in the employ of the Cambria Iron Company, who was killed in the Rolling-Mill coal mine of said company on Monday night, February 18, 1884. February 19, 1884, notice received from John Fulton, Esq., general mining engineer of said company, to hold inquest same day. Precept to Constable P. R. Miller to summon jury. Same day certificate of constable that jury had been summoned. Same day jury sworn and proceeded to view the body, and then adjourned to meet at the office of the justice on Thursday evening, February 21, 1884, at seven o'clock, to hear testimony as to cause of death. February 21, 1884, notice to John Fulton, Esq., of the time and place where inquest would be held. February 21, 1884, subpœna for witnesses. February 21, 1884, Valentine Smith, Andrew Mullen, William Carthen, Antomo Piola sworn and examined.

JOHN H. FISHER,
Justice of the Peace.

(TRANSCRIPT.)

COMMONWEALTH OF PENNSYLVANIA, } ss:
Clearfield county, }

An inquisition indented and taken at Goss Run colliery, in the county of Clearfield, the 26th day of January, in the year of our Lord one thousand eight hundred and eighty-four, before me, J. M. Lehman, one of the justices of the peace in and for the county aforesaid, upon the view of the body of George Dubrick, then and there lying dead, upon the oaths of John McPhilomy, John Bateman, John Lochrie, James Lacey, Michael Lacey, and John Corbit, good and lawful men of the county aforesaid, who, being sworn to inquire on the part of the Commonwealth when, where, how, and after what manner, the said George Dubrick came to his death, do say, upon their oaths, that the said George Dubrick came to his death on the 26th day of January, A. D. 1884, in Goss Run colliery, aforesaid, by reason of a fall of coal falling on him, and crushing his skull; that no blame can attach either to the operators of said colliery or any of the employés; that his death was caused by an unavoidable accident, as above stated, and not otherwise.

In witness whereof, as well the aforesaid justice as the jurors aforesaid have to this inquisition put their hands and seals on the day and year and at the place first above mentioned.

J. M. LEHMAN, *J. P.*, [SEAL.]
JOHN MCPHILOMY, [SEAL.]
MICHAEL LACEY, [SEAL.]
JAMES LACEY, [SEAL.]
JOHN CORBIT, [SEAL.]
JOHN LOCHRIE, [SEAL.
JOHN BATEMAN, [SEAL.]

Clearfield county, ss:

I certify that the above is a true transcript of the foregoing inquisition.

Given under my hand and seal, this 14th day of February, A. D. 1884.

J. M. LEHMAN, *J. P.* [SEAL.]

TABLE I.---SHOWING LOCATION OF COLLIERIES IN THE SIXTH BITUMINOUS MINE DISTRICT.

NAME OF COLLIERY.	Name of Company.	Loeation—County.	Name of Superintendent.	Post-Office Address.
Ashland,	Ashland Coal Company,	Clearfield,	J. P. Colihan,	Houtzdale, Clearfield county.
Argyle,	Huff & Coulter,	Cambria,	J. P. Wilson,	South Fork, Cambria county.
Atlantie,	Whitehead & Co.,	Clearfield,	John Whitehead,	Houtzdale, Clearfield county.
Atalanta, Nos. 2 and 3,	Atalanta Coal Company,	do.	J. W. Weleh,	Osceola Mills, Clearfield county.
Aurora,	Luke & Heist,	Cambria,	D. W. Luke,	South Fork, Cambria county.
Ansonville, Nos. 1 and 2,	Clearfield Bituminous Coal Company,	Clearfield,	G. H. Platt,	Peale, Clearfield county.
Bellview, Nos. 1 and 2,	Bellview Coal Company,	Allegheny,	P. Y. Hite,	Hites, Allegheny county.
Ben's Creek,	S. H. Smith & Co.,	Cambria,	S. H. Smith,	Altoona, Blair county.
Blaine Run,	Blaine Run Coal Company,	Clearfield,	J. M. Elliot,	Coalport, Clearfield county.
Cody Ridge,	H. K. Grant.	do.	Stephen Sheldon,	Philipsburg, Centre county.
Cushon,	Cambria Iron Company,	Cambria,	John Fulton,	Johnstown, Cambria county.
Conemaugh,	do. do.	do.	do.	do. do.
Coaldale, Nos. 2 and 3,	Coaldale Coal Company,	Clearfield,	D. W. Holts,	Philipsburg, Centre county.
Coaldale, No. 4,	J. A. Losee,	do.	J. A. Losee,	Osceola Mills, Clearfield county.
Cambria Mine,	Cambria Iron Company,	Cambria,	John Fulton,	Johnstown, Cambria county.
Columbia, Nos. 1 and 2,	J. L. Mitchell & Co.,	Clearfield,	J. L. Mitchell,	Osceola Mills, Clearfield county.
Colorado,	Hoyt & Jackman,	do.	Thomas Pilkington,	Philipsburg, Centre county.
Drane Colliery,	T. C. Helms,	do.	T. C. Helms,	Osceola Mills, Clearfield county.
Derby,	Barnes Brothers.	do.	Thomas Barnes,	Philipsburg, Centre county.
Drysart, Nos. 1 and 2,	D. Laughman & Co.,	Cambria,	D. Laughman,	Altoona, Blair county.
Delaney,	Altoona Iron Company,	do.	Andrew Patriek,	1326 Eighth avenue, Altoona, Blair county.
Decatur,	Decatur Coal Company,	Clearfield,	John Nuttall,	Philipsburg, Centre county.
Empire,	Empire Coal Company,	do.	John Asheroft,	do. do.
Eureka, Nos. 2, 3, 4, 5, and 6,	Berwind, White & Co.,	do.	W. A. Christ,	Osceola Mills, Clearfield county.
Excelsior, Nos. 1 and 2,	Fisher, Miller & Co.,	do.	Thomas Richards,	Houtzdale, Clearfield county.
Elizabeth,	Elizabeth Coal Company,	do.	P. F. Blair,	Brishin, Clearfield county.
Euclid,	Euclid Coal Company,	Cambria,	D. W. Luke,	South Fork, Cambria county.
Eldorado,	J. E. Palmer & Co.,	do.	J. E. Palmer,	Mountaindale, Cambria county.
Foster Mine,	Saltsburg Coal Company,	Indiana,	D. S. Robinson,	Saltsburg, Indiana county.
Franklin, Nos. 1 and 2,	Kittanning Coal Company,	Clearfield,	C. B. Finley,	Osceola Mills, Clearfield county.
Glenwood,	Huff & Co.,	do.	C. Campbell,	Philipsburg, Centre county.
Glen,	J. R. Smith.	Armstrong,	J. R. Smith,	Kelly, Armstrong county.
Gosford,	Gosford Coal Company,	do.	W. A. Aeheson,	Gosport, Armstrong county.
Griffiths,	J. F. Griffiths,	Cambria,	J. F. Griffiths,	Johnstown, Cambria county.
Gallitzin Shaft,	Taylor & McCoy,	do.	David McCoy,	Gallitzin, Cambria county.
Great Bend,	Great Bend Coal Company,	do.	John E. Bell,	Bellwood, Blair county.
Glenshaw,	Spencer & Co.,	Allegheny,	S. M. Spencer,	Glenshaw, Allegheny county.
Grassflat, Nos. 9, 10, 11, and 12,	Clearfield Bituminous Coal Company,	Clearfield,	G. H. Platt,	Peale, Clearfield county.
Goss Run,	Berwind, White & Co.,	do.	W. A. Christ,	Osceola Mills, Clearfield county.
Hildrup,	Sandy Liek Coal Company,	do.	F. S. Hays,	Du Bois, Clearfield county.
Hamson,	Harrison Coal Company,	do.	Daniel Laug,	Houtzdale, Clearfield county.
Hawk's Run,	Jones, Mull & Co.,	do.	B. Jones,	Philipsburg, Centre county.

Irvona,	Irvona Coal Company,	Clearfield,	W. J. Nichols,	Pottstown, Montgomery county.
Kittanning, Nos. 1 and 2,	Kittanning Iron Company,	Armstrong,	H. A. Colwell,	Kittanning, Armstrong county.
Keystone,	J. A. Losee,	Clearfield,	J. A. Losee,	Osceola Mills, Clearfield county.
Karthaus,	Whitehead & Co.,	do.	John Whitehead,	Houtzdale, Clearfield county.
Karthaus,	Berwind, White & Co.,	do.	Peter Cameron,	do. do.
Lancashire, No. 1,	Barnes Brothers,	do.	Thomas Barnes,	Philipsburg, Centre county.
Lancashire, No. 2,	do. do.	do.	do. do.	do. do.
Leonard,	Leonard Coal Company,	do.	John Langdon,	do. do.
Logan,	Henry Livright,	do.	Henry Livright,	Osceola Mills, Clearfield county.
Laurel Run, Nos. 1 and 2,	Nuttall, Bacon & Co.,	do.	G. M. W. Guffy,	Philipsburg, Centre county.
Logan Ridge,	H. J. Smith & Co.,	do.	James Leonard,	Osceola Mills, Clearfield county.
Leahy Mine,	Canon Leahy,	Cambria,	Canon Leahy,	Hemlock, Cambria county.
Munroe Slope,	Gallitzin Coal and Coke Company.	do.	T. Munroe,	Gallitzin, Cambria county.
Mentzer's,	E. W. Mentzer,	do.	E. W. Mentzer,	Hollidaysburg, Blair county.
Martinsdale, Nos. 1 and 2,	J. C. Martin & Co.,	do.	J. C. Martin,	Portage, Cambria county.
Moshannon,	Moshannon Coal Company,	Clearfield,	P. B. Zentmyer,	Houtzdale, Clearfield county.
Morrisdale, No. 7,	R. B. Wigton & Son,	do.	W. H. Wigton,	Philipsburg, Centre county.
Morrisdale, No. 8,	do. do.	do.	do.	do. do.
Morrisdale, No. 10,	do. do.	do.	do.	do. do.
Morrisdale, No. 11,	do. do.	do.	do.	do. do.
Morrisdale, No. 12,	do. do.	do.	do.	do. do.
Morrisdale, No. 14,	do. do.	do.	do.	do. do.
Natrona,	Pennsylvania Salt Manufacturing Company,	Allegheny,	F. B. Hill,	Natrona, Allegheny county.
Oak Ridge,	Oak Ridge Coal Company,	Armstrong,	J. C. Baker,	Dexter, Armstrong county.
Ocean,	Whitehead & Co.,	Clearfield,	John Whitehead,	Houtzdale, Clearfield county.
Ocean Shaft,	do. do.	do.	do.	do. do.
Pacific, Nos. 1 and 2,	do. do.	do.	do.	do. do.
Penn, Nos. 1 and 2,	Relkart Brothers,	do.	J. P. Curran,	do. do.
Rochester,	Bell, Lewis & Yates,	do.	S. B. Elliot,	Du Bois, Clearfield county.
Reading,	Reading Coal Company,	do.	H. Livright,	Osceola Mills, Clearfield county.
Rolling-Mill Mine,	Cambria Iron Company,	Cambria,	John Fulton,	Johnstown, Cambria county.
Riverview,	Riverview Coal Company,	Armstrong,	S. N. Singley,	Kittanning, Armstrong county.
Red Bank, Nos. 1 and 2,	Fairmount Coal and Iron Company,	do.	George Mulenger,	New Bethlehem, Clarion county.
Reimerton,	Franklin Coal Company,	do.	I. I. Wagner,	Reimerton, Armstrong county.
Sterling No. 1 Colliery, Nos. 1 & 2,	Robert Hare Powell & Co.,	Clearfield,	James Campbell,	Houtzdale, Clearfield county.
Sterling No. 2 Colliery, Nos. 1 & 2,	do. do.	do.	do.	do. do.
Schuylkill,	Bryson & Richards,	do.	D. Richards,	Coalport, Clearfield county.
Spartan,	Samuel Hegarty,	do.	William Wright,	do. do.
Springhill,	Leonard Coal Company,	do.	John Langdon,	Phillipsburg, Centre county.
Stineman's,	J. C. Stineman,	Cambria,	J. C. Stineman,	South Fork, Cambria county.
South Fork,	George B. Stineman,	do.	George B. Stineman,	do. do.
Summerhill, Nos. 1 and 2,	C. A. Dimond,	do.	Stephen Dimond,	Summerhill, Cambria county.
Smittle's,	Smittle & Co.,	do.	John Smittle,	Mountaindale, Cambria county.
Sonman Shaft,	Whitehead & Co.,	do.	John Whitehead,	Huntingdon, Huntingdon county.
Sonman's Mines, No. 1,	W. H. Piper & Co.,	do.	John Leahy,	Hemlock, Cambria county.
Sonman's, Nos. 2 and 3,	do. do.	do.	do.	do. do.
Standard,	Standard Coal Company,	do.	C. A. Hughes,	Altoona, Blair county.
Standard,	Niven & Co.,	do.	D. F. Jones,	Portage, Cambria county.
Turner's Mine, Nos. 1 and 2,	J. M. Turner,	Indiana,	J. M. Turner,	Blairsville, Indiana county.
Tarentum,	Tarentum Coal Company,	Allegheny,	John Kennedy,	Tarentum, Allegheny county.
Vulcan,	R. B. Wigton & Sons,	Clearfield,	W. H. Wigton,	Philipsburg, Centre county.
Victor, Nos. 1, 2, and 3,	Victor Coal Company,	do.	John Walton,	do. do.

TABLE I.--SIXTH BITUMINOUS MINE DISTRICT--Continued.

NAME OF COLLIERY.	Name of Company.	Location—County.	Name of Superintendent.	Post-Office Address.
Webster, No. 1,	Webster Coal Company,	Clearfield,	Philip Hartman,	Summerhill, Cambria county.
Webster, No. 2,	Houtzdale Coal Company,	do.	C. W. Vandusen,	Houtzdale, Clearfield county.
Webster, No. 3,	John C. Scott & Son,	Cambria,	Philip Hartman,	Summerhill, Cambria county.
Williamsport,	Williamsport,	Clearfield,	Robert Logan,	Tyler, Clearfield county.
West Moshannon,	Moshannon Coal Company,	do.	P. B. Zentmyer,	Houtzdale, Clearfield county.
Watson Shaft,	Watson Brothers,	Allegheny,	Robert Watson,	East street, Allegheny City.

TABLE II.—*A statement showing Characteristics, Number of Employés, Production, &c., of the respective Collieries, in the Sixth Bituminous Mine District, for the year 1884.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Aliport,	Bituminous,	Drift,	1			1	47	5	10	62	3	2		48.000
Argyle,	Semi-bituminous,	Drift,					53	5	15	78	5	2		73,044
Ashland,	Bituminous,	Drift,					26	5	2	7	33	2	2	23,852
Atlantic,	do.	Drift,	1	1		1	90	23	15	133	13	4		165,443
Beaver Run,	Semi-bituminous,	Slope,					30	5	5	40	3	1		2 273
Bellview, No. 1,	Bituminous,	Drift,					55	4	11	70	10			31 127
Bellview, No. 2,	do.	Drift,					47	5	11	63	11			14,738
Ben's Creek,	Semi-bituminous,	Drift,					23	4	6	33	3	2		4,488
Blaine Run,	Bituminous,	Drift,					26	3	4	33	3	1		9,538
Coaldale,	do.	Drift,					44	7	5	56	4	2		3,000
Cody Ridge,	do.	Drift,					26	3	2	31	1	1		8,000
Colorado,	do.	Drift,					18	4	4	26	2	1		12 762
Columbia,	Semi-bituminous,	Drift,					38	3	4	45	3	1		21,484
Conemaugh,	do.	Drift,					23	1	7	31	2	1		10 627
Cushon,	do.	Drift,					54	6	16	76	5	1		49,996
Decatur,	Bituminous,	Drift,					31	6	5	42	4	3		36,645
Delaney,	do.	Slope,	2		100	2	20	2	3	25	1	1		3,748
Derby,	do.	Drift,					38	7	6	51	5	3		39,048
Dixon Mines,	do.	Drift,					50	3	7	60	4			34,175
Dysart,	Semi-bituminous,	Drift,					40	3	6	49	4	3		10,640
Eldorado,	Bituminous,	Drift,					19	3	4	26	1	2		1,100
Elizabeth,	Semi-bituminous,	Drift,					26	10	3	39	2			5.000
Empire,	do.	Drift,	1	1	24	2	95	5	8	108	6	2		80.000
Etna and Vesuvius,	Bituminous,	Drift,					45	3	10	58	6			1.636
Euclid,	Semi-bituminous,	Drift,					17	2	4	23	2			7,301
Eureka, No. 2,	Bituminous,	Drift,					249	24	22	296	20	9		189 106
Eureka, No. 3,	do.	Drift,					36	1	9	46	2	1		33,431
Eureka, No. 4,	do.	Drift,					70	3	6	79	3	2		56,885
Eureka, No. 5,	do.	Drift,	1	2	68	2	107	4	10	121	5			78.523
Excelsior,	do.	Drift,					100	16	9	125	11	6		79,000
Foster Mine,	do.	Drift,					47	1	18	66	2		1	23.261
Franklin,	do.	Drift,					172	12	43	217	21	1	1	110,154
Galitzin Shaft,	do.	Shaft,	1	1	40	2	95	11	11	116	5	1		71,200

TABLE II—*Continued.*

NAME OF COLLIERY.	Character of Coal. (Bituminous or Semi-Bituminous.)	Slope, Shaft, or Drift.	Number of pumps.	Number of engines.	Horse power.	Number of boilers.	Number of miners—men.	Number of miners—boys.	Other employees.	Total employees.	Number of mules inside.	Number of mules outside.	Number of locomotives.	Total production of coal in tons.
Glen,	Bituminous,	Drift,	1				14	2	5	21	2			5,116
Glenshaw,	do.	Drift,					29	3	7	39	2	1		6,170
Glenwood,	do.	Drift,					25	2	4	31	2	3	3	23,480
Gosford,	do.	Drift,					51	6	7	64	4	1		6,950
Great Bend,	do.	Drift,					55	6	7	68	3	1		27,912
Griffiths,	do.	Drift,					8	2	1	11	1	1		990
Harrison,	do.	Drift,					38	2	3	43	3	1		9,629
Hildrup,	do.	Drift,					77	11	9	97	7	1		23 000
Irvona,	do.	Drift,	1	2	30	1	46	7	4	57	4	2		39 068
Karthaus,	Semi-bituminous,	Drift,					78	5	9	92	5			14 500
Keystone,	do.	Drift,					13	1	2	16	1			6,459
Kittanning,	Bituminuous,	Drift,	1			1	36	3	1	40	5	2		35,500
Lancashire, No. 1,	do.	Drift,					40	5	8	53	5	1		38.060
Lancashire, No. 2,	do.	Drift,					42	10	5	57	3	1		45,223
Lancaster, No. 1,	do.	Drift,					50	12	16	78	5			3,832
Lancaster, No. 2,	do.	Drift,					54	8	4	66	2			4,587
Laurel Run,	do.	Drift,					46	9	8	63	6	3		44,005
Leonard,	Semi-bituminous,	Drift,					14	2	2	18	6	3		2,810
Logan,	Bituminous,	Drift,					63	8	9	80	8	1		30,950
Mapleton,	Semi-bituminous,	Drift,					28	2	7	37	4	1		5,476
Martindale,	do.	Drift,					34	1	7	42	2	1		15 688
McCartney's,	Bituminous,	Drift,					14	3	4	21	1	2		1,150
Mentzer, Ben's Creek,	Semi-bituminous,	Drift,					30	5	6	41	5	2		13.319
Morrisdale Mines,	Bituminous,	Drift,					96	14	11	121	6	4	1	48,178
Moshannon,	Semi-bituminous,	Drift,					34	4	6	44	5	2		30.739
Mount Vernon,	Bituminous,	Drift,					19	3	2	24	2			4.575
Munroe Slope,	Semi-bituminous,	Slope,					31	4	6	41	2	1		6.597
Natrona,	Bituminous,	Drift,					16	2	8	26	4	1		9,489
Oak Ridge,	do.	Drift,		1	20	1	99	8	23	130	5	1		68.351
Ocean, No. 1,	do.	Drift,					77	11	10	98	5	1		41,086
Pacific, Nos. 1 and 2,	do.	Drift,					130	26	23	179	18	1		73.199
Pardee,	do.	Drift,					17	1	3	21	1			2,001
Penn,	do.	Drift,					18	6	2	26	2			5,030
Reimerton,	do.	Drift,					28	5	7	40	2	1		573
Riverview,	do.	Drift,					35	3	6	44	3	1		7,635

Rochester,	do.	Drift,	2	2	55	1	327	59	74	460	25	1	1	328,412
Rolling-Mill,	Semi-bituminous,	Drift,	2	1	30	1	166	119	47	232	18		2	132,745
Smith's,	Bituminous,	Drift,					11	2	2	15	1	1		3,484
Sonman, No. 1,	Semi-bituminous,	Drift,					44	8	12	64	4	3		38,688
Sonman, No. 2,	do.	Drift,					44	7	9	60	3	2		43,379
Sonman Shaft,	do.	Shaft,	2	1	45	2	27	2	13	42	4			491
South Fork,	do.	Drift,	1	1	20	1	13	3	5	21	3	1		10,521
Spartan,	Bituminous,	Drift,					31	4	4	39	3	1		8,400
Standard,	do.	Drift,					49		5	54	3	2		13,043
Sterling, No. 1,	Semi-bituminous,	Drift,	2	1	150	2	205	41	33	279	32		1	273,408
Sterling, No. 2,	do.	Drift,	1	9	1		108	13	13	134	9		1	96,168
Stewardson,	Bituminous,	Drift,					16	11	17	44	8			5,873
Stewardson Furnace,	do.	Drift,					16	10	18	44	8			1,501
Stineman's,	Semi-bituminous,	Drift,					35	6	9	50	4	1		30,257
Tarentum,	Bituminous,	Drift,					11	1	3	15	1			628
Turner's,	do.	Drift,					11		2	13	1			5,428
Tyler,	do.	Drift,	1	1	25	1	34	3	1	38	2	1		1,800
Victor, No. 1,	do.	Drift,		1	20	1	59	6	9	74	3	1	1	21,770
Victor, No. 2,	do.	Drift,					18	3	3	24	2			3,400
Victor, No. 3,	do.	Drift,					68	7	8	83	2	1		32,273
Vulcan,	Semi-bituminous,	Drift,												16,315
Watson's Shaft,	Bituminous,	Shaft,	1	2	60	2	15	1	3	19	2			4,290
Webster, No. 1,	Semi-bituminous,	Drift,					83	18	5	106	8	2		36,009
Webster, No. 2,	do.	Drift,	1	1	40	1	126	33	26	175	7			53,500
Webster, No. 3,	do.	Drift,					56	1	5	62	3			29,764
Webster A and B,	do.	Drift,					96	23	10	129	16	2		14,000
West Moshannon,	Bituminous,	Drift,		2	60	2	95	17	13	125	10			30,930
Williamsport,	do.	Drift,					17	2	2	21	2			1,800

TABLE III.—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Sixth Bituminous Mine District.*

NAME OF COLLIERY.	How ventilated.	Diameter of fan in feet.	Size of furnace.	Amount of air discharged per minute.	Number of openings.	Number of headings.	Inlet—size of—square feet.	Outlet—size of—square feet.
Atlantic,	Furnace,		6′ x 5′	12,740	1	7	42	35
Argyle,	Furnace,		3′ 6″ x 5′	9,000	2	2	100	110
Ashland,	Natural,			4,720	1	2	48	36
Belleview,	Furnace,		5′ 6″ x 7′	22,540	2	4	99	60
Colorado,	Furnace,		6′ x 7′	9,000	1	1	36	36
Cushon,	Furnace,		6′ 6″ x 7′	7,840	1	3	80	40
Conemaugh,	Furnace,		6′ 3″ x 3′	7,490	1	1	36	21
Derby,	Natural,			6,240	1	1	30	25
Dixon Mine,	Furnace,		6′ x 6′	10,200	1	2	49	49
Decatur,	Furnace,		6′ 3″ x 2′ 2″	12,560	2	5	34	40
Eureka, No. 2,	Furnace,		6′ x 8′	15,240	2	6	70	60
Eureka, No. 3,	Furnace,		5′ x 10′	6,780	1	2	42	48
Eureka, No. 4,	Furnace,		5′ x 6′	11,270	1	3	40	32
Eureka, No. 5,	Furnace,		6′ x 7′	13,570	1	3	30	36
Empire,	Furnace,		4′ x 6′	14 280	1	7	42	40
Excelsior,	Furnace,		6′ x 6′	16,720	1	5	49	36
Elizabeth,	Natural,			2,200	1	2	63	30
Foster Mine,	Furnace,		6′ x 7′	18,000	1	4	42	42
Franklin,	Furnace,		6′ x 7′	29,000	3	8	95	65
Glenwood,	Furnace,		6′ x 6′	5.890	3	4	120	40
Glen,	Natural,			1,200	1	1	35	42
Galitzin Shaft,	Exhaust steam,			16.440	2	1	76	50
Great Bend,	Furnace,		3′ x 5′	6,200	1	4	30	56
Irvona,	Furnace,		4′ x 5′	8,340	2	4	51	42
Keystone,	Natural,			2.300	1	1	42	25½
Kittanning Mine,	Natural,			5,700	5	6	48	48
Karthaus,	Furnace,		4′ x 5′	8,880	1	6	42	36
Laurel Run,	Furnace,		5′ x 6′	10,450	2	6	34	40
Leonard,	Natural,			3,100	1	1	27	35
Lancashire, No. 1,	Furnace,		4′ 6″ x 4′ 6″	8,160	1	7	30	20
Lancashire, No. 2,	Furnace,		5′ x 5′	7,900	1	4	48	25
Munroe Slope,	Natural,				1	5	35	66
Moshannon,	Natural,			9 000	1	1	56	44
Morrisdale Mines,	Furnace,		6′ x 6′	13,450	4	3	56	48
Mentzer, Ben's Creek,	Natural,				1	1	30	20
Oak Ridge,	Furnace,		4′ x 4′	9,900	2	11	68	49
Ocean, No. 1,	Furnace,		6′ x 6′	8 540	1	6	42	36
Pacific, Nos. 1 and 2,	Furnace,		6′ x 7′	17,930	2	7	42	28
Rochester,	Fan,	6		72 000	4	5	180	63
Rolling-Mill Mine,	Fan,	8		33,450	1	3	60	96
River View,	Natural,			5,300	1	2	42	42
South Fork,	Natural,			2,000	1	1	30	25
Stineman's,	Natural,			4,000	4	3	36	25
Standard,	Natural,			5,400	1	3	36	36
Sonman, No. 1,	Furnace,		7′ x 7′	10,000	2	3	112	54
Sonman, No. 2,	Furnace,		6′ x 8′	5,430	1	2	42	24
Spartan,	Furnace,		4′ x 4′	4 200	2	2	36	30
Stewardson,	Natural,			3,100	2	4	72	35
Sterling, No. 1,	Furnace,		3′ 4″ x 7′ / 3′ 6″ x 6′	24,560	2	11	80	95
Sterling, No. 2,	Furnace,		3′ x 5′	18 320	2	5	76	100
Vulcan,	Exhaust steam,		New open	ing.	1	2	48	64
West Moshannon,	Furnace,		6′ x 7′	18,420	1	1	48	48
Webster, No. 3,	Furnace,		6′ x 6′	9,000	1	3	42	36
Webster, No. 2,	Furnace,		4′ x 5′	17,400	2	5	49	25
Watson Shaft,	Fan,	6		2,100	1	2	66	18
Williamsport,	Furnace,		4′ x 5′	3,200	1	1	36	21

TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the Sixth Bituminous Mine District, for the year commencing November 1, 1883, and ending October 31, 1884.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allport,	300	12,000	275	11,000	240	9,600	275	11,400	150	7,500	265	11,000						
Argyle,	225	9,000	225	9,000	300	12,000	250	10,000	200	8,000	250	14,000	275	11,000	225	9,000	300	12,000
Atlantic,													260	12 740	210	12.600	371	12.985
Bellview, No. 1,	165	7,590	95	4,495	215	9,245	255	11,730	155	7.750	405	17,415	215	9.890	175	9,275	285	12.255
Bellview, No. 2,							295	14 670	105	5,985	535	32 100	301	14,448	207	10,350	472	28,320
Ben's Creek,	165	6,600	70	2,520	120	5,400	180	7,200	190	6,840	173	7,875	50	2,500	33	2 000	80	2,800
Blaine Run,							190	5,700	170	4 760	180	6,480						
Colorado,	230	8,395	200	6,480	230	8,395	250	9,000	135	4,860	290	9,280	220	7,920	140	6,300	230	10,350
Columbia,							120	4,560			144	5,760	220	8,500	90	5,000	280	7,700
Cody Ridge,					490	10.800							220	9.240			238	10,000
Cushon,	59	3,776	30	1,620	161	4 025	60	3,840	62	3,348	161	4,025	58	3,712	61	3 294	161	4,025
Conemaugh,													100	3 600	50	1 500	120	3.720
Coledale,													290	11,000	250	10,000	240	9,600
Dixon,	300	13,650	270	12,960	320	15,688	230	11,270	160	7,680	240	11,760	220	10,780	160	7.680	230	11,270
Decatur,	1,500	55 224	1,000	56,870	1,800	73,360	200	7,200	150	8.250	200	8,000	250	9,656	200	12.870	350	15,360
Derby,	80	3,360	90	3,600	140	4,800	80	3,360	60	3 000	170	5,280	90	3,240	80	3,200	128	3,200
Dysart,							75	2,700	50	2,000	100	3,000						
Eureka, No. 2,	370	16,753	160	8,784	340	16,605	400	17,976	190	10,093	360		390	17,568	200	11,530	360	17,914
Eureka, No. 3,							90	5,334	80	4,680	100	17,914	110	5,754	80	4.680	120	7,448
Eureka, No. 4,							190	7.600			195	6,576	250	8.460	225	8.256	230	8,416
Eureka, No. 5,							410	12.300	200	11,000	250	8,775	600	12,440	200	11,700	325	12,780
Excelsior,	380	21,280	400	16,800	500	18,000	600	21.600	520	24,960	800	28.800						
Empire,	305	12,810	250	10,000	325	13,000	320	13,440	277	11,000	340	13,600	350	14,700	300	12,000	380	15,280
Etna and Vesuvius,	245	11,760	160	9,120	410	24.600												
Euclid,	128	4,608	38	2,302	110	3,960	170	6,120	40	2,160	150	5,400	250	9,000	120	6,480	230	8,280
Foster,							180	8,820			180	8,820	150	7,350	90	4,410	230	9,660
Franklin,	350	10,500			480	28.800	375	11,050	168	5,400	590	35,000						
Glenwood,	127	5,080	93	4,185	137	6,165	130	5.200	95	4 275	129	5,805	130	5,200	93	4,185	130	5,850
Glen,	60	2,640	28	1,400	100	4,900	72	3,160	25	1.250	80	4,320						

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	NOVEMBER.						DECEMBER.						JANUARY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Galitzin,	275	13,475	175	7,700	350	15,750	230	12,650	190	8,550	400	18,000	250	13,750	190	8,550	330	14,850
Glenshaw,	..	..	..	..	..	..							75	3,375	100	3 600	78	3,510
Harrison,	..	..	..	..	..	..	120	4 560	180	8,640	290	13 920	120	4,560	80	2 960	210	4,410
Hildrup,	250	12,000	200	9 600	310	14,480	260	12,480	180	8.640	290	13,920	270	12,940	180	8,640	300	14,400
Irvona,	..		..	..			120	4,920	115	5,575	110	5,500	45	2.430	50	2,500	70	2,450
Kittanning,	..			..		..							70	3.360	60	2,880	70	3,360
Lancashire, No. 1,	150	5,760	150	3,695	190	9 620	180	6.600	160	4 800	200	8,000	220	7.920	130	4,460	280	11,200
Lancashire, No. 2,	100	4,200	200	5,400	200	5,000	130	4,120	140	3.200	170	6 000	240	10,080	140	5,670	180	9,100
Laurel Run,	400	13,600	400	14,400	800	3,200	120	4 060	180	7,480	300	12.060	300	11,356	200	8,424	200	9 360
Logan,	..	..					225	7,425	160	6,400	240	7,920	200	9,600	95	3,895	300	9,900
Martindale, No. 1,	120	4,320	70	3,780	160	4,000												
Martindale, No. 2,	..			..	..		165	8,250	145	6.380	200	7,200						
Mentzer,	..	..		..	..		150	4,500	145	4.640	160	5,880						
Moshannon,	..	..					240	13,440	220	9 900	255	11,220						
Natrona,	280	14 000	225	11 250	1,150	43.125	280	14,000	210	10,500	1,200	45,000	140	7,000	60	3,500	1,150	43,125
Oak Ridge,	280	11,180	100	4,500	300	9,000	280	11,180	195	7,410	270	8,100	280	12,080	205	7,790	330	9 900
Ocean, No. 1,		..						..	..	..	..	..	230	9,660	200	9,600	280	10,080
Penn,	140	5,600	50	2,000	350	5,250		..	..	..	..	..	160	6,400	75	3,000	380	5,700
Pacific,	..	..						..					475	19,950	265	19,080	697	19,530
Rolling Mill,	721	46,144	395	19,750	117	43,190	724	46.336	296	19,800	620	43,400	722	46 108	394	19.700	620	43.400
Rochester,	..	.	325	20,475	1,500	72 000	510	39,275	440	26,400	2,000	96,000	520	24,960	225	14 175	2,405	115 440
River View,	..	..	..	..				..					250	10 500	200	8 400	250	10 500
Sterling, No. 1,	230	18,400	250	10,000	225	20.250	230	18,400	240	9,600	230	20,700	255	17 850	225	11,830	250	24,250
Sterling, No. 2,	230	11,270	185	10,175	280	12 600	230	11,270	185	10,175	280	12,600	300	14.100	210	8.490	345	17.250
Smith's,	125	5,000	..	..	340	2,100		..	..	..	..	..	230	9,200	170	8 500	185	9 250
Stineman's,		..	..	..	..	..	260	10 920	65	3 510	350	10.500	180	5 400			290	5,800
Standard,							120	4,320	115	4,025	128	4 900						
Sonman, No. 1,	95	3,420	80	3.600	215	6 450	110	3,960	65	2,923	195	5 850	160	4,800	120	4,675	195	5 850
Sonman, No. 2,	115	4,410	85	3,828	190	4,560	90	3,780	60	2,700	170	4 080	80	3 360	55	2 475	170	4 080
Sonman Shaft,								..		..		..	210	6,300	100	4,050	240	10,080
Turner's,	150	7,200	..	..	120	2,160												

Tarentum,	...	...	...	...	.	...	...	...	...	.	.	...	90	2,250	85	2,380	90	2,700
Tyler's Colliery,													280	11,760	125	5,250	530	11,130
Victor, No. 1,	260	13.770	190	11,400	250	12.500	270	13.770	178	10.680	259	12,850						
Victor, No. 2,	240	10,560	148	8,880	230	10,350	237	10 428	147	8,820	228	10,260						
Victor, No. 3,	...			.	..		230	13,800	214	12 840	230	10,350	216	12,960	200	12 000	222	9,990
West Moshannon,							400	19,200	200	10.800	500	21,000						
Webster,	270	12,429	190	7,600	700	18,900	270	12,420	210	8,820	550	16,500	110	3,300	80	3,200	120	4,320

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	FEBRUARY.						MARCH.						APRIL.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Allport,	250	10,000	200	8,000	235	9,400	300	14,400	125	6,250	240	12,000						
Argyle,	250	10,000	200	8,000	300	12,000	300	12,000	200	8,000	300	12,000	225	9,000	200	8,000	250	10,000
Atlantic,							265	12,985	215	12,900	364	12,740	255	12,495	210	12,600	364	12,740
Ashland,	70	2,940			150	3,000	85	3,060	50	2,000	65	2,925	110	5,720	140	4,400	165	5,940
Bellview, No. 1,	180	8,280	190	9,310	315	13,545	190	8,740	145	8,410	315	13,545	165	7,530	145	7,105	265	11,395
Bellview, No. 2,	265	12,720	165	9,075	395	25,300	310	13,020	185	10,535	420	25,200	90	4,320	156	8,424	388	23,280
Blaine Run,	150	4,500	130	3,900	155	4,650	162	4,860	172	4,300	197	4,728	156	4,680	170	4,250	197	4,728
Columbia,	200	7,800	100	5,500	350	9,625	105	3,780	90	4,420	125	4,500						
Colorado,	200	6,300	140	5,040	260	9,360	270	9,320	140	5,040	280	10,000	270	9,720	180	6,480	280	10,080
Cushon,	59	3,776	59	3,186	160	4,000	58	3,712	60	3,240	160	4,000	59	3,774	60	3,240	160	4,000
Conemaugh,							140	5,040	70	2,200	223	4,788	175	6,300	105	3,780	295	6,195
Cody Ridge,					333	11,991							200	8,000	195	7,806	211	9,500
Derby,	190	7,600	120	5,400	135	9,100	200	7,956	150	10,120	300	13,360	125	4,500	95	3,800	135	5,670
Dixon,	250	12,250	150	7,200	260	12,740	170	8,330	70	8,160	250	12,310	230	11,270	270	8,160	250	12,250
Decatur,							150	5,400	105	5,250	230	5,750	250	2,656	150	8,250	300	12,000
Dysart,	74	2,700	50	1,980	100	3,000												
Delaney,							200	12,500	175	7,875	200	10,000						
Eureka, No. 2,	370	16,753	190	10,093	360	17,605	400	17,976	180	9,657	370	17,950	390	17,568	200	10,530	370	17,950
Eureka, No. 3,	120	6,552	110	5,840	120	7,448	120	6,552	100	6,480	130	7,968	140	7,350	130	6,640	130	7,968
Eureka, No. 4,	315	10,350	275	9,815	290	10,272	300	13,240	320	11,212	380	13,075	300	13,240	320	11,212	400	13,698
Eureka, No. 5,	190	13,440	300	13,240	345	13,464	210	14,622	320	14,000	390	15,048	220	15,180	340	14,972	390	15,048
Empire,	300	12,600	280	11,200	350	14,000	270	11,340	265	10,600	295	11,800	290	12,180	260	10,400	315	12,600
Euclid,	150	5,400	80	4,320	200	7,200	210	7,560	90	4,860	190	6,840	150	5,400	60	3,240	140	5,040
Excelsior,	500	24,000	460	22,540	660	23,760	390	19,110	460	16,560	650	23,400	610	21,960	440	21,560	700	25,200
Foster Mine,	100	4,200			120	5,040	190	8,080			250	10,500	110	4,620			230	9,660
Franklin,	360	10,800			520	31,200	360	12,600			350	31,200						
Glenwood,	132	5,280	97	4,365	127	5,716	130	5,200	28	4,410	131	5,895	125	5,000	92	4,140	126	5,670
Glenshaw,	75	3,375	88	3,168	86	3,870	34	4,071	36	3,000	18	5,000	123	5,535	120	4,320	125	5,625
Glen,	60	2,400			70	2,940												
Galitzin,	300	16,500	200	9,000	375	16,875	280	15,400	200	9,000	330	14,850	280	15,400	200	9,000	330	14,850
Great Bend,							112	3,360	65	1,170	250	7,000	192	5,760	106	2,544	281	7,868

Harrison,													120	4 560	80	2,960	210	4,410
Hildrup,	240	11,520	200	9,600	290	13.920	280	13,440	200	9,600	330	15,840						
Irvona,	145	6 960	100	5.000	150	7.200	333	12,000	222	10,000	275	11,000						
Kittanning,	70	3,920	60	3,360	70	3,920	70	3,780	60	3,240	70	3,780	70	3,780	60	3 240	70	3,780
Laurel Run,							200	7.956	125	5,234	150	6.000	200	7.130	150	5,460	200	8.000
Lancashire, No. 1,	190	6,840	150	4,700	205	8.500	225	8 100	200	6,400	185	9,250	190	6,840	120	3,840	150	6,000
Lancashire, No. 2,	165	7,920	160	6,000	200	9,400	205	9,840	230	5 210	210	9 456	175	8,400	180	7,200	200	9 000
Moshannon,	220	12 320	200	9,000	235	10,340	235	13,160	215	9,675	250	11,000	225	14 280	235	10,570	285	11,540
Mount Vernon,	100	3,000	50	2,700	55	4.065	100	3,000	36	2,050	90	3 240	116	3,480			56	3,528
Morrisdale, No. 13,	144	6,912	45	4,050	126	6 048												
Morrisdale Mines,	400	20,160	120	9,000	385	18,480	420	2,160	140	10 500	386	18,528						
Martindale,							200	7.200	185	6,660	210	7,560	125	4,000	80	3,360	170	4.250
Natrona,	140	7.000	60	3 000	1,200	45,000	230	11,500	200	10.000	1,100	41.250	890	44,500	290	14,500	1,260	47.250
Oak Ridge,	300	13,050	100	4,500	375	11,250	300	13.050	210	6 300	245	7.350	335	14,572	210	6 300	410	12 300
Ocean,							220	9 240	190	9,120	280	10,080	230	9,660	192	9,216	256	9,240
Penn,	110	4,400	48	1,920	460	6,900	150	6,000	63	2,520	480	7.200						
Pacific,							465	19.530	270	19,440	690	19,320	450	18,900	255	18 360	690	19.320
Rochester,	520	24 900	390	23,400	2,140	102,720	510	24.480	420	23,100	1,950	132 850	420	17,640	215	9,030	1,210	76 230
Rolling-Mill,	720	46.080	396	19,800	619	43,330	720	46,080	149	10,430	619	43,330	723	46,272	240	12,000	619	43,630
River View,	200	4.400	190	7,980	200	8,400							210	10 080	200	8,400	200	8,400
Sterling, No. 1,	230	18,860	240	10,800	255	19.380							240	17,880	240	10,560	410	16,810
Sterling, No. 2,	190	17,290	200	9.000	285	18.525							240	8 640	300	12,000	340	17,680
Smith's,	120	5,040			140	5.040	34	1,066			200	1,200						
Stineman's,	180	5,400			170	4.080												
Sonman, No. 1,	120	4.320	100	4,500	240	7,200	125	4,500	90	4,050	225	6,750						
Sonman, No. 2,	125	5 250	110	4,950	220	5.280												
Spartan,	250	9,000			200	8,400												
Standard,													150	5,400	135	4,050	125	5,000
Turner's,							85	3 500			85	3,500						
Victor, No. 3,	234	14,040	224	13 440	232	1.440	228	13,218	150	13,080	234	10.510	226	13,500	214	12,840	230	10,350
West Moshannon,	400	19.200	80	4,800	560	19,600	380	15,200	150	6,880	450	20,400						
Webster, No. 2,	190	9,310			210	8 400							200	8,000	180	8,100	250	9.060
Webster, No. 3,													125	5,500	110	4,400	120	5 040
Webster, A,							260	11,700	220	9,240	540	16,200	265	11,925	200	8 400	530	15,900
Webster, B,							270	12,420	190	7,600	630	17.010	670	18,090	640	17,280	690	18,630
Watson,							60	3,960	130	3,900	265	4,770	50	1 860	60	900	100	1,800

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	MAY.						JUNE.						JULY.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Argyle,	. . .						200	8,000	125	5 000	225	9,000	225	9,000	175	7,000	275	11,000
Ashland,	105	5,460	120	4,040	155	5,580	85	4,400	70	2,400	115	4,140	112	5,376	100	3,500	146	5,200
Atlantic,							130	6 370	105	6 300	182	6,370	132	6,492	105	6,300	182	6,370
Bellview, No. 2,	242	10 104	180	9,720	347	20,820	328	13,776	242	12,684	380	22 800	240	10,080	164	8,528	310	18 600
Blaine Run,	150	4,500	166	4,150	184	4 416	160	4,800	170	4,250	197	4,728						
Beaver Run,	115	4 485	50	2,250	115	3,450												
Colorado,	270	9,720	170	6,120	230	10,080	270	9,920	170	6,120	280	10,880	270	9,720	170	0,120	280	10,080
Cushon,	. .	.	. .	. .							.	. .	98	9,800	45	2,160	213	8 520
Conemaugh,		. .									. .	.	179	6,444	90	3,780	305	7,320
Columbia,	200	8,000	125	6,800	300	9.000	225	3 600	90	4,300	200	6,600						
Derby,	150	3,400	100	4 000	85	3,822	110	3,850		. .	209	6,000	75	2 700	80	2,880	105	3,150
Decatur,	200	7.956	100	7.370	275	12,360	225	8,806	150	10,020	300	13 360	225	8,806	100	7,370	250	11,360
Delaney,	175	8,750	200	8,000	185	9 250							200	9,800	150	7,200	225	11,022
Dixon,	.	.		.			. .	. .		. .	.	.	65	2,340	50	4,000	90	2,700
Dysart,	. . .	. .	.	. .		.						. .						
Eureka, No. 2,		. .					380	17,164	210	10 935	340	16,605						
Eureka, No. 3,	120	6,552	100	5,480	90	6 096	130	6,972	120	6,552	130	7,968	120	6,552	100	5 480	100	6 576
Eureka, No. 4,	300	13,240	330	12,520	380	13,075		.		.		.	489	15.168	310	13,628	410	15.757
Eureka, No. 5,	200	14,040	310	13,628	360	14,044		.				. .	470	14,877	300	13,240	400	15,328
Euclid,	130	4,630	40	2,160	120	4,320												
Empire,	.	. . . .		. . .			290	12,180	260	10,400	340	13,600	300	12,600	270	10,800	330	13 200
Excelsior,	. .	.	.	. . .			440	21,560	570	20,520	631	22,565	255	16,320	300	14,700	432	15,570
Foster,	72	3,024		. . .	100	4,200	65	2.730			55	2.310	480	20,160			480	20,160
Franklin,	. . .			.			365	12.775	. .	. .	520	31.200	365	12,775			550	33,000
Glenwood,	124	4,960	89	4,005	122	5,490	124	4,960	88	3 960	122	5,490	122	4.880	86	3,870	120	5,400
Glen,	50	2,400	60	3 240	70	2.940	.	.	. .		. . .		60	2 970	45	2.227	60	2 520
Glenshaw,	32	4,231	15	5,420	20	6 750							125	5,625	158	5,698	150	6,750
Galitzin,	. .						230	12 600	200	9,000	300	13,500	230	12.650	260	9,000	300	13,500
Great Bend,	162	4,860	100	3,200	340	9,520		. . .	. .				172	4 860	50	1,750	206	5,768
Griffiths,	86	2 000	60	1,500	110	2,200	. .	.	. .	.	. .	. .	60	1 600			85	1,700
Irvona,	. . .	. . .	. .	. .	. .	. .	. .	. . .	.	. . .	. .	. . .	310	13,020	260	13,000	320	13,200

Kittanning,	70	3,780	60	2,880	70	3,780	70	3,780	60	3,240	70	3,780	70	3,780	60	3,240	70	3,780
Keystone,	93	4,916	62	2,480	88	2,244	88	3,696	64	2,560	80	2,553						
Logan,	200	9,600	93	3,790	290	9,800	160	8,200	160	3,945	240	8,800	160	8,000	95	3,295	300	9,900
Laurel Run,	225	8,806	150	6,624	275	12,360	200	7,956	130	5,904	250	11,360	100	4,556	130	5,904	230	12,560
Lancashire, No. 1,	175	6,450	140	4,000	175	7,100	145	5,540	125	4,000	180	8,100	180	6,620	170	3,640	200	8,360
Lancashire, No. 2,	130	6,500	160	7,200	180	7,060	130	4,940	200	3,500	145	7,250	110	5,600	140	4,800	190	7,900
Mentzer,	115	4,140	75	3,000	160	4,000	80	5,280	60	2,520	120	3,860	95	3,425			110	2,750
Moshannon,	220	12,320	205	9,225	250	11,000	240	14,440	220	9,900	285	12,540	220	12,320	200	9,000	250	11,000
Morrisdale,	338	18,928	181	7,240	450	16,200	268	16,884	170	8,544	310	14,880	344	16,320	243	11,664	432	15,552
McCartney's,													130	4,630	115	3,737	30	4,550
Martindale,							125	4 000	80	3,360	170	4,250						
Natrona,	280	14,000	200	10,000	1,100	41,250	295	14,750	200	10,000	1,100	41,250	230	10,005	140	2,780	290	9,570
Oak Ridge,	420	9,450	90	3,960	320	9,600							120	5,040	100	4 800	134	4,830
Ocean,							120	5,040	100	4,800	140	5,040	230	9,660	132	9,540	345	9,660
Pacific,	415	17,430	210	10,080	1,230	77,490	225	9,450	135	9,720	345	9,660	405	17,010	230	11,040	1,030	64,890
Rochester,							395	16,590	215	10 320	1,130	71,190	200	8,400	200	8,400	210	8,820
Rivervlew,							220	9,240	180	6,300	220	9,240	775	45,550	300	18,000	360	34 560
Rolling-Mill,													270	25,650	200	12,000	300	23 200
Sterling, No. 1,	300	24 000	180	8,100	280	26,600	310	22,320	290	11,600	265	24,512	200	17,800	255	10,000	325	16,800
Sterling, No. 2,	250	19,000	185	7,770	180	18 000	280	13,720	225	8,900	300	15,600	300	9,000	140	8,400	320	9 600
Sonman, No. 1,	300	9.000	135	8,100	340	9,120							130	5,460	110	4,950	240	5,760
Sonman, No. 2,	130	5,460	90	4,050	230	5 520												
Stineman's,	150	3,000			130	3,900	180	4,800	115	4 760	170	4 760						
Stewardson Furnace,							130	4,680	215	4,375	125	4,375						
Victor,	238	14,280	226	13,560	136	10,620	226	13,560		12,900	227	10,215	226	13,560	214	12,850	224	10,080
Webster, No. 1,	250	11,250	210	8,820	710	19,170												
Webster, No. 2,	90	4,230			100	2,500	180	8,820	200	7,200	390	7,500						
Webster, No. 3,	120	7,920	100	4,099	125	5,250							120	4,200	110	3,960	90	3,600
Watson's Shaft,	50	3,300			200	3,600	25	1,650			120	2,160	50	2,300			250	4,500

TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

NAME OF COLLIERY.	AUGUST.						SEPTEMBER.						OCTOBER.					
	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.	Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Argyle,	278	10,000	222	8,000	250	10,000	222	8,000	155	7,000	225	9,000	278	10,000	178	8,000	250	10,000
Atlantic,	195	9,555	153¾	9 225	273	9,555	260	12,740	210	12,650	364	12,740	260	12,740	210	12 600	371	12,985
Ashland,	106	5,088	110	3 850	118	4,248	95	4,560	85	2,720	115	4,140	112	5,376	115	4 025	138	4,968
Bellview,	290	12,180	152	7,904	376	22,760	257	10,974	167	9,018	360	21,600	274	11,508	327	17,004	360	21,600
Columbia, Nos. 1 and 2,	400	8,000	100	5,000	250	10,000												
Colorado,	270	9,720	170	6 120	270	10,080	260	9,360	160	5,760	270	9,720	270	9,720	170	6,120	280	10,080
Cushon,	100	8,000	45	2,160	210	8,400	95	7,600	45	2,160	198	7,920	95	7,600	45	2,160	199	7,960
Conemaugh,	180	6,480	90	3,780	310	6,510	175	6,300	85	3,570	300	6,300	177	6,372	87	3,654	304	3,684
Cody Ridge,	307	9,000	120	4,320	360	9,720												
Derby,	180	5,400	100	4,600	250	5,500	90	3,240	50	2,100	115	2,875	150	4,500	130	3,900	200	5,090
Dixon,	170	8 330	120	5,760	200	9 800	180	8 820	140	6,720	210	10 290	170	8,330	160	7,680	270	13 230
Decatur,	200	7,456	125	8,745	300	13 360	250	9,656	150	10,120	325	14,360	250	9,636	150	10,120	300	13,360
Delaney,	180	9,000	120	5,040	185	9 250												
Eureka, No. 2,	390	17,568	200	10,530	330	16,204	360	16,721	170	9,220	330	16,204	390	17,568	180	9,657	350	17,077
Eureka, No. 3,	120	6 552	80	4,680	110	7,008	110	6,132	90	5,080	100	6,576	130	6,972	110	5,840	120	7,448
Eureka, No. 4,	300	12 240	320	11,212	380	13,075	300	13,240	320	11,212	380	13,075	300	13,240	320	11,212	380	13,075
Eureka, No. 5,	300	15,750	320	14,000	430	16,450	490	15,450	315	13,782	415	15,931	470	14,877	300	13,246	400	13,228
Empire,	300	12 600	275	11,000	330	13,200	340	14 280	225	10,200	375	15,000	340	14,280	320	12,800	370	14 800
Excelsior,	280	10 800	180	8,640	615	22,140	375	14,107	210	9,600	700	25,200	280	10,800			490	17,645
Eldorado,	140	4,620	75	2,250	140	4,620												
Elizabeth,							54	3,500			120	3 600	55	3,500	60	3,000	105	3,150
Foster,	350	14,700			450	18,900	330	13,860			460	1,932	500	21,000			470	19 740
Franklin,							360	12,600	300	12,000	520	31 200	360	12,600			520	31,200
Glenwood,	126	5,040	91	4,095	124	5,580	127	4,080	92	4,130	125	5 625	122	4,880	89	4 005	120	5,445
Great Bend,	139	4,170	62	1,984	238	6,664	196	5 880	66	2 112	271	7,588	195	5,850	65	2,275	285	7,980
Gosford,	372	7,440			330	9,900	240	5,400	34	1,350	170	5,610						
Glen,							55	2,722	45	2,227	55	2,310	55	2,722	40	1,960	50	2,100
Galitzin,													240	9 600	220	8,800	320	16,000
Irvona,	200	8,400			210	8,820	230	9,660			270	11,340	210	8,820	110	5,500	230	9,660
Kittanning,	70	3,780	60	3,740	70	3,780	70	3,780	60	3,240	70	3,780	70	6,300	60	3,240	70	6,300
Karthaus,	230	11,040	180	9,900	360	10,800	255	12,495	205	12,300	357	12,495	220	9,240	192	9,216	256	9,240

Keystone,																	96	4,032	90	3 600	135	3,442
Logan,							160	8,200	90	3,680	280	9,400										
Lancashire, No. 1,	240	10,880	200	7.100	220	10,800	280	11,140	220	7,040	230	9,500	280	10,880	220	7,040	270	10.880				
Lancashire, No. 2,	140	6,340	190	6,040	175	6,900	135	6,350	210	6.100	195	7,800	145	6.960	200	7.000	195	7.800				
Laurel Run,							160	6,596	210	8,784	270	12,160	160	6.596	300	12,024	300	13.360				
Leonard,	190	4,940			155	5,425	165	4,455			120	4,200	180	4,860			120	4,200				
Mentzer, Ben's Creek,	120	4,220	80	3,200	200	5 000																
Moshannon,	210	11,760	190	8,550	225	9 900	220	12,320	200	9,000	235	10.340	350	14,000	230	10,350	265	11.660				
Morrisdale,	326	18,256	178	8,544	304	17.024	354	16,992			365	17.520	310	17,360	162	6,480	341	16,368				
Mapleton,	80	4,914	90	7,452	170	9,792	60	4,116	80	7,092	150	8.885										
Monroe Slope,							45	3,000	30	1,500	100	3,000	260	9,100	115	4,140	138	9.180				
Oak Ridge,	170	7,395	110	2,750	220	7,040	230	9,008	110	2,200	330	11,560	300	13.050	220	4,400	330	10,890				
Ocean, No. 1,													230	9.660	210	10,080	268	9,660				
Pacific,	356	14,962	206	14,850	506	14,175	450	18,900	255	18,360	675	18,900	460	19.320	265	19,080	690	19.320				
Rochester,	395	16,590	215	10,320	1,200	75,600	395	16,590	225	9.000	1,250	78,750	400	16.800	215	10 320	1,200	75.600				
Rolling Mill,	778	46,680	300	18,000	365	35,040	800	48,000	295	17,700	360	34,560	790	47,400	280	16,800	365	35,040				
River View,							260	8,400	210	8,820	220	9,040	190	7,980	180	7,560	190	7,980				
Sterling, No. 1,	260	22,100	220	8,800	280	22,400	300	22,800	235	10,575	310	23,235	340	27 200	150	6,750	280	26.600				
Sterling, No. 2,	310	16,120	275	11,000	325	16,800							280	21,280	170	7,140	180	18,000				
Stineman's,							100	3,500	50	2,700	105	3,150	100	3,600	40	2.000	120	3.000				
Sonman, No. 1,	290	8,700	140	8,400	160	4,800	145	6,990	130	5,850	265	6.360	280	8,400	130	7.800	210	6,000				
Sonman, No. 2,	115	4,830	110	4 950	210	5,040	360	9.000	135	8.100	200	6,000	120	5,040	90	4,050	190	4,560				
Stewardson,	100	3,600	100	3.500	125	4,375	100	3,600	90	3,150	110	3 850	110	3,960	100	3,500	130	4,550				
Spartan,	84	4,000	87½	3,500	111	4,000	83	4,000	67	4,000	115	5,980	111	4,000	70	5,000	166	5,000				
South Fork,													60	1.800	40	1,600	80	2 000				
Standard,													90	3,240	70	2.800	110	3,960				
Victor,	224	13,440	213	12,780	226	10,170	224	13,440	214	12,840	224	10 080										
Vulcan,	257	12,336	225	10,125	192	12,288	267	12,816	210	9,450	198	12,672	262	12,376	231	10.395	190	12,150				
West Moshannon,													300	14,400	60	3,240	400	19.200				
Webster, No. 2,							225	11,025	215	9,675	350	8 750	160	7.840	154	7,392	390	9,750				
Webster, No. 3,	105	4,410	100	4,500	115	5,175	150	5,250	40	4 000	180	5,400	170	7,140	90	4,500	200	7,200				
Watson,	80	5,280	140	4,200	340	5,120							60	3,960	50	2.100	200	3,600				
Williamsport,													140	5,040	100	4,200	220	4,620				

LIST OF ACCIDENTS *occurring in the mines of the Sixth Bituminous Coal District of Pennsylvania, for the year ended October 31, 1884.*

Date of accident.	Name of Person Injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident.
Nov. 1	John Owens,	..	.....	..	.....	.....	.....	Collar-bone broken by fall of bone coal.
21	Frank Daley,	..	.....	..	.....	.....	.....	Ankle crushed and hip broken.
30	M Moore,	15	Single,	..	.....	.....	.....	Leg severely bruised.
15	John Dougherty,	15	Single,	..	.....	.....	.....	Thigh broken and head cut.
Dec. 18	Thomas McCoy,	34	Married,	..	.....	.....	.....	Leg broken.
22	Thomas Ewing,	50	Married,	..	.....	.....	Dec. 24	Collar-bone broken and internally injured—died on the 24th.
Jan. 4	William Loughrey,	35	Single,	..	.....	.....	.....	Collar bone broken by fall of coal.
26	George Lubrick,	35	Married,	2	.....	.....	.....	Killed by fall of coal.
25	Robert Monroe,	24	Single,	..	.....	.....	.....	Leg broken and bruised.
Feb. 21	J. J. Sliker,	20	Single,	..	.....	.....	Feb. 21	Leg broken by fall of coal.
20	Thomas Johnowack,	50	Single,	..	.....	.....	20	Internally hurt by being caught between car and prop.
1	Thomas Carroll,	35	Married,	..	.....	.....	1	Leg broken.
7	Matthew Simpson,	29	Married,	..	.....	.....	7	Bruised hands, arms, and legs.
6	James McHugh, junior,	13	Single,	..	.....	.....	6	Leg broken by fall of coal.
12	William Cox,	23	Single,	..	.....	.....	12	Leg broken by fall of coal.
12	J. Craggs,	43	Married,	..	.....	.....	12	Bruised by fall of coal.
21	Joslah B. Miles,	35	Married,	2	.....	.....	22	Killed by fall of slate.
21	John O'Neal,	30	Married,	..	.....	.....	22	Leg broken.
21	Anthony Piola, Hungarian,		.....		.....	.....	22	Forehead and nose cut.
Mar. 13	Peter Erb,	40	Married,	3	.....	.....	Mar. 13	Killed between cars and wall while trying to get on top to ride out.
14	Stephen Crobers,	30	Married,	..	.....	.....	...	Hurt between cars.
10	Andrew McClure,	14	Single,	..	.....	.....	10	Killed by fall of coal.
24	Morris Finn,	50	Married,	..	.....	.....	24	Slightly burned by explosion of gas.
6	Henry Roach,	30	Married,	..	.....	.....	6	Loss of left arm near shoulder.
6	John Finn,	19	Single,	..	.....	.....	6	Seriously burned by explosion of gas.
6	Thomas Martin,	48	Married,	..	.....	.....	6	Slightly burned by explosion of gas.
6	Patrick Shanley,	24	Single,	..	.....	.....	6	Slightly burned by explosion of gas.
Apr. 25	Mike Joseph,	35	Married,	..	.....	.....	Apr. 25	Hurt on chute between mine cars.
28	John Radcliff,	60	Married,	..	.....	.....	28	Killed by fall of slate.
18	Edward Ignot,	40	Married,	..	.....	.....	18	Slightly hurt by fall of coal.
28	James Nixon,	40	Married,	..	.....	.....	28	Leg broken.
29	Matthew Thoma,	30	Single,	..	.....	.....	May 3	Seriously injured by fall of coal.
7	Thomas McFadden,	49	Married,	..	.....	.....	.....	Head and face cut.

May 5	William Martin,	35	Single,					Leg broken.
14	Thomas Tobin,	45	Married,					Leg broken.
17	John Munsou,	37	Married,					Bruised and back hurt.
31	GustaveTaylor,	30	Single,					Shoulder dislocated.
24	Mike Gibbons,							Small bone in leg broken.
7	Thomas West,	35	Married,					Severely hurt.
7	George West,	32	Married,	2			May 9	Killed.
June 27	Henry Lendenburg,	24	Single,				June 28	Killed by fall of coal.
12	J. H. Keller,	40	Married,					Hurt by fall of slate.
July 28	Evan B. Evans,	44	Married,				July 28	Hurt on head by stone falling from bucket while sinking air-shaft.
29	Patrick Bradley,	25	Single,				29	Slight fracture of leg.
25	John Bender,	23	Single,				25	Back hurt by fall of slate.
Aug. 5	John Bowser,	18	Single,					Fracture of the thigh.
25	John Eagan,	45	Single,				Aug. 26	Fatally injured—died in a few hours.
27	Joseph Goodyear,	40	Married,	5				Back bruised.
	David Shehan,						19	Burned and injured by firing a shot.
	Patrick McElwee,						19	Burned and injured by firing a shot.
15	Richard McHenry,	35	Married,					Arm broken by fall of coal.
27	Alexander Johnson,	16	Single,					Seriously bruised by fall of coal.
16	Jacob Heisel,	28	Married,					Leg broken by fall of coal.
Sept. 8	John Furgerson,	44	Married,	8			Sept. 20	Killed by fall of coal.
23	F. Dougerin,							Collar-bone broken.
	J. W. Botes,	35	Married,					Small bone in foot broken by fall of coal.
11	Robert McGinty,	23	Single,					Shoulder dislocated and jaw-bone broken by fall of coal.
12	William Prince,	52	Married,					Hurt by fall of coal—died the same day.
Oct. 10	Alexander Montooth,	19						Small bone in leg broken.
29	Mike Groose,	20	Married,				Oct. 29	Killed by fall of coal.

INDEX.

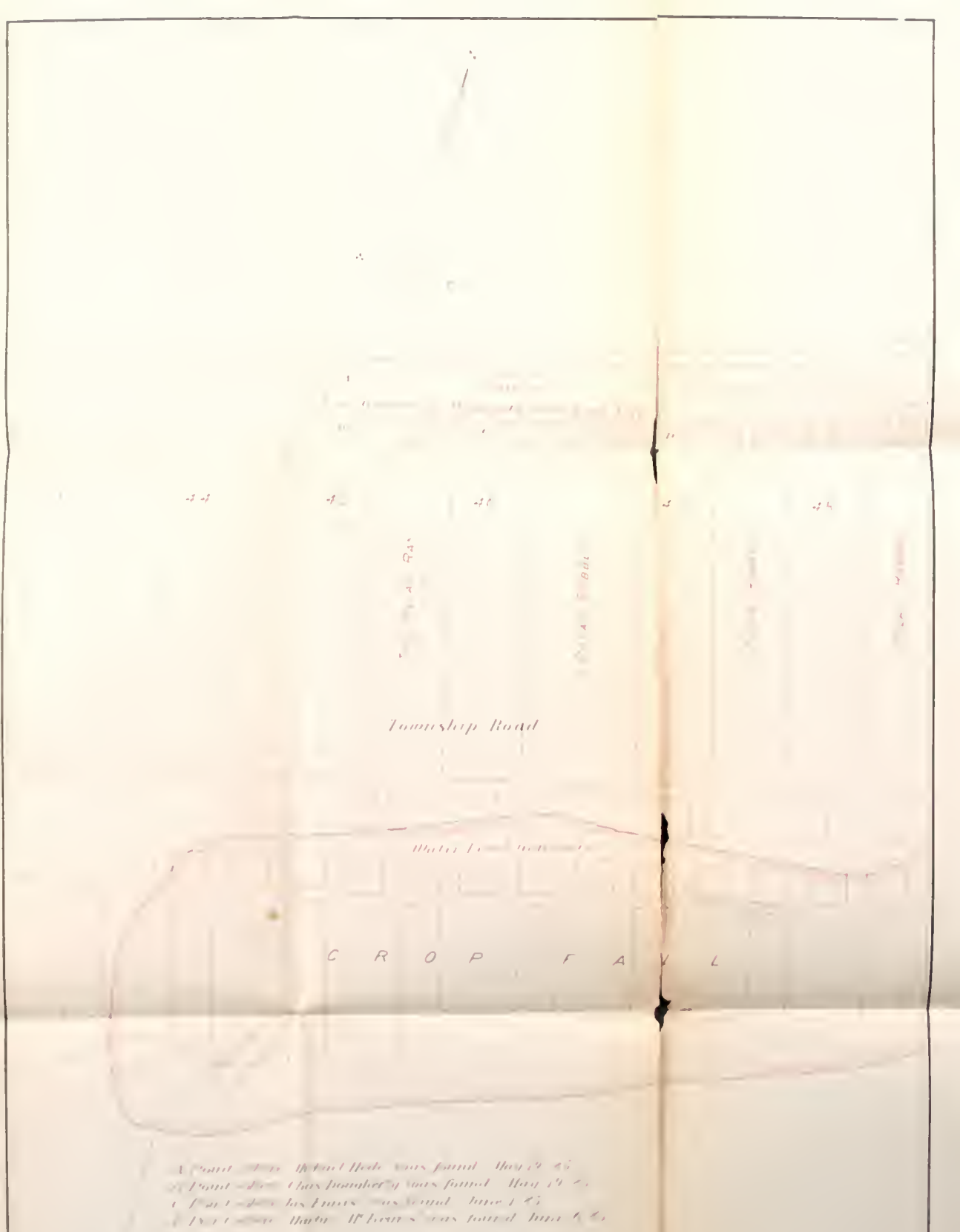
	Page.
Africa, Hon. J. Simpson, letter of,	i
McCamant, Joel B., letter of,	iii-x
Agricultural implements,	100
Axes and saws,	100
Bessemer steel,	96
Blast furnaces,	94
Bloomaries,	97
Boilers and engines,	100
Bolts and nuts,	101
Breweries,	155
Bricks,	152
Bridges,	101
Chains,	101
Clay, products of,	152-154
Coal, anthracite,	82
Coal and coke,	83
Crucible steel,	97
Distilleries,	156
General machinery,	101-102
Glass,	128
Grist mills,	136-141
Iron, products of,	84-104
Iron foundries,	98
Iron ore,	92-93
Labor—strikes,	72-81
Labor immigration,	63-72
Laws, factory,	20-27
Leather, products of,	150-152
Living, cost of,	40-44
Lumber, products of,	141-149
Manufactures, miscellaneous,	160-164
Newspapers, when published,	127
Petroleum refiners,	129-130
Petroleum exports,	131-132
Petroleum produced and exported,	133
Petroleum, wells producing,	134
Petroleum, wells drilling,	135
Petroleum—pipe lines,	135
Planing mills,	145
Printing and publishing,	122-128
Pullman city, reports on,	165-187
Report of inspector, First bituminous district,	1*a*-49
Report of inspector, Second bituminous district,	49*a*-82
Report of inspector, Third bituminous district,	82*a*-127
Report of inspector, Fourth bituminous district,	127*a*-149
Report of inspector, Fifth bituminous district,	149*a*-197

Page.
Report of inspector, Sixth bituminous district, ... 197*a*-240
Saw mills, ... 141–144
Slate, ... 154
Street railways, ... 157–159
Testimony of employés, ... 46–63
Textile fabrics, ... 105–122
Wages in Great Britain and Pennsylvania, ... 1–46
Wages in general trades, ... 38
Wages in coal and coke, ... 1–6
Wages in glass, ... 34–39
Wages in iron, ... 7–18
Wages in textiles, ... 19–20
Wages—weekly average, ... 39
Wages, steam railroad, ... 27–33

SKETCH
SHOWING
RECENT CAVE & WORKINGS.
OF THE
ROSS SEAM at No 1 SLOPE.
Susquehanna Coal Co.

Scale 100 ft to Inch Dec 15th 1885.

A-WHERE MEN ARE KNOWN TO BE



SKETCH

SHOWING PORTION OF THE WORKING ON THE

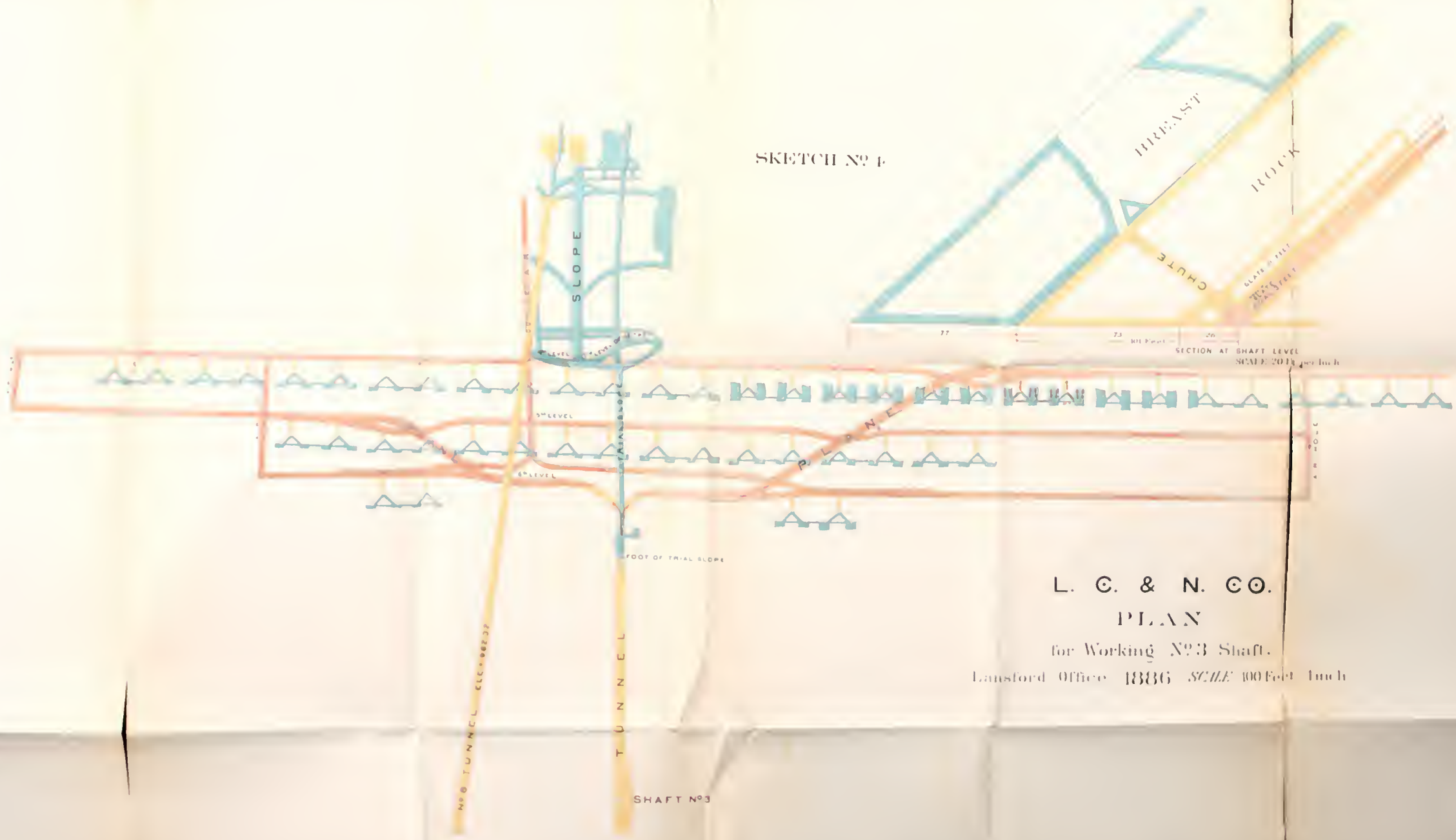
MAMMOTH VEIN EAST GANGWAY FIRST LIFT

AT

NORTH ASHLAND COLLIERY.

Scale 1 Inch = 50 Feet

SKETCH № 4



L. C. & N. CO.

PLAN

for Working № 3 Shaft.

Lansford Office 1886 *SCALE* 100 Feet 1 inch